

The Attorney-General and others -v- The Mayor, aldermen & citizens of the city of Nottingham. Minutes of evidence (February 10 - February 15, 1904).

Contributors

Great Britain. High Court of Justice. Chancery Division.
Nottingham (England)
London School of Hygiene and Tropical Medicine

Publication/Creation

[London] : The Solicitors' Law Stationery Society, Ltd, Law and Parliamentary Printers, [1904?]

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In the High Court of Justice.

CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,

Wednesday, 10th February, 1904.

BEFORE

MR. JUSTICE FARWELL.

**THE ATTORNEY-GENERAL
AND OTHERS**

v.

**THE MAYOR, ALDERMEN & CITIZENS
OF THE CITY OF NOTTINGHAM.**

[*Transcript from the Shorthand Notes of BARNETT & BARRETT, 40, Chancery Lane, W.C., and H. H. TOLCHER & Co., 93 and 94, Chancery Lane, W.C.*]

Counsel for the Plaintiffs: Mr. UPJOHN, K.C., and Mr. A. LLEWELYN DAVIES (instructed by Messrs. HIND and ROBINSON, Agents for Messrs. WELLS & HIND, Nottingham).

Counsel for the Defendants: Mr. ASQUITH, K.C., M.P.; Mr. MACMORRAN, K.C., and Mr. R. J. PARKER (instructed by Messrs. SHARPE, PARKER, PRITCHARDS, BARHAM & LAWFORD, Agents for Sir SAMUEL GEORGE JOHNSON, Town Clerk, Nottingham).

February 10, 1904

EVIDENCE—First Day.

Mr. UPJOHN opened the case on behalf of the Plaintiffs.

Mr. F. Parkin.

Mr. FRANK PARKIN, sworn.

Examined by Mr. UPJOHN.

1. I think you reside at Nottingham, and carry on business as A
a surveyor?—Yes.

2. And you are also a civil engineer?—Yes.

3. In September, 1903, under the instructions of the plaintiffs' B
solicitors, I think you attended at Bestwood and made an inspection
of the hospital and land on which it stands?—Yes.

Mr. UPJOHN : I will not trouble you about the distances, my
Lord, because I think we have agreed them all. Can we agree a map
of the site, Mr. Asquith?

Mr. Justice FARWELL : There is the survey, is not that C
sufficient?

Mr. ASQUITH : We took the middle of the hospital ; they
took it at the outside of the fence.

Mr. UPJOHN : Very well, I will get it from the witness.

4. Just look at that map and tell me if you are responsible for it D
(handing map).—Yes, this is my plan.

5. I think you were at Bestwood some three days in September
making your measurements, and so forth?—Yes.

6. Are the measurements on that map correct?—Yes.

7. You have shown what I have called circles, but they are really E
not circles, they are more like ellipses. What have you taken as the
centre ; there are two of them, blue and red?—A quarter of a mile
radius is shown on this map from the hospital boundary.

8. Which boundary?—The boundary of the hospital side.

9. To draw the ellipses on one side you have taken the boundary

on one side, and then to complete the ellipses on the other side you have taken the back boundary ; is that right ?—Yes, it is a quarter of a mile in every direction.

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Mr. F. Parkin.

10. You have shown the quarter-mile in that way ?—Yes.
- A 11. You have then shown the half-mile radius on it ?—That is taken in the same way.
12. Then you have shown all the buildings and the gardens, and so forth ?—Yes.
13. Where there is no fence shown on your map there is no fence existing ?—No.
- B 14. Is that right ?—Yes, that is right.
15. The hospital building is a wooden structure, is it not ?—Yes, a wooden structure.
16. Now I want you to take your memory to the 3rd of September of last year and to go to something that happened then. Do you remember being there with some other gentlemen on the 3rd September ?—Yes. I was with Mr. Robinson, Mr. Loweth, and Mr. Paterson.
- C 17. Mr. Robinson and Mr. Loweth are two of the plaintiffs, and Mr. Paterson is the solicitor's clerk ?—Yes.
- D 18. Do you remember walking with them on the road outside the hospital fence ?—Yes.
19. Did you then see anybody inside the fence ?—Yes, there were patients wandering within the boundary.
- E 20. Outside the building ?—On the hospital side outside the building.
21. Were they near the road ?—They were towards the back of the land. Mr. Paterson spoke to one across the stream at the back.
- F 22. That was afterwards. When you first saw them were they near the road ?—They seemed to be wandering around all at large.
23. Then afterwards you went round to the allotments near those Moor Bridge cottages ?—Yes.
24. Was that a place where there was no fence ?—No fence at all.
- G 25. Was there anybody at work in the allotment gardens ?—Yes.
26. Was there anybody on the hospital side ?—Yes, there was a patient.
- H 27. What was he doing ?—He was simply wandering about the side, close to the back boundary of the side.
28. Was he conversing with anybody ?—He spoke to Mr. Paterson.
- I 29. He was near enough for that ?—He was within a few yards.
30. Then there was some conversation. I do not know whether

February 10, 1904 my friend objects to you mentioning this, but you saw a patient
 --- conversing?

Mr. F. Parkin.

Mr. ASQUITH : He was discharged.

31. Mr. UPJOHN : No, he had not been. Did he say when he would be discharged?—I did not hear that. A

32. After that you went to Mr. Barrow's cottage, near the pumping station?—Yes.

33. There the hospital grounds come up to Barrow's yard?—Yes.

34. Did you see anyone there just inside the boundary?—Yes; I think there were patients there. B

35. Was there any conversation with them?—I think they were in the habit of talking to them over the yard.

36. Never mind the yard; I want to know what they did when you were there?—I am not quite certain. I remember seeing them wandering about the side. C

37. Do you remember on the 6th September you were riding along the road with Mr. Paterson?—Yes.

38. Did you see any children in the road?—Yes, they were standing on the fence, looking over the fence of the hospital. D

39. Is that the fence on the main road, or the back road?—Just off the main road.

40. On the back road that leads to Barrow's cottage?—Yes.

41. What were they doing there?—They were standing on the fence about a couple of feet from the hospital fence. E

42. The company have got a railed fence?—Yes, and the children were standing there looking over.

43. I do not think we have got in the admissions the levels of the railways and the embankments about the Midland Railway at the back. How far is that from the hospital?—It is 16 feet below the entrance to the hospital side. F

44. The hospital stands on an elevation, does it not?—Yes.

45. Mr. Justice FARWELL : Do you mean above the level of the building?—Yes.

46. Mr. UPJOHN : That is the main line?—Yes. G

47. As to the Bestwood branch, how much of that is below the level?—Eight feet below the level.

48. As to the Great Northern Railway, is that above or below?—That is 15 feet below.

49. Rising to how much?—Rising to 21 feet north of the boundary. H

50. Then, I think, just opposite the allotment grounds the bank of the hospital side is about 7 feet higher than the allotment grounds? —Yes, that is it. February 10, 1904
—
Mr. F. Parkin.

51. Have you got the dimensions of the hospital buildings?—It is shown on the plan.

52. You mean it is a question of scale?—Yes.

Cross-examined by Mr. ASQUITH.

53. Just a word about your measurements. What is the length of the area ground from end to end as it abuts upon the old road? Have you a scale there? Let me suggest to you it is about 350 yards?—(After making a calculation) Yes, it would be about that.

54. What is the width looking from the road to the furthest point across?—I put it to you it is 85 yards?—Yes, about 85 yards.

55. As I understand, in making your circular figure, what you have done is to mention a portion of it, first from the road boundary outwards, then from the left-hand end outwards, then from the furthest point the 85 yards opposite the road outwards, and finally from the other end?—Yes.

56. That is how your figures are constructed?—Yes.

57. When did you make your measurements? When did you go there? You have told us you went there some time in September. Have you been there since?—Yes, I went there on November 26th and 27th.

58. I want to ask you about the state of things then. First of all, did you find when you went in November along the high road—and I will deal with that first—that there was an outside fence 6 feet 6 in height?—Yes.

59. With barbed wire at the top?—Yes.

Mr. ASQUITH: I have a photograph which will give your Lordship a better idea of the nature of it.

Mr. Justice FARWELL: I have one here, I think.

60. Mr. ASQUITH: Did you go in?—No, I did not.

61. Did you occupy at any time such a position as to see that within the outside fence there was an inner fence—an iron fence?—Yes, a barbed wire fence.

62. Between the outer fence and the buildings?—Yes.

63. You were not able, I suppose, to measure the distance, if you say you did not go inside?—No; but I have it on the plan.

64. I suppose the distance is probably agreed?—Yes.

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Mr. F. Parkin.

65. I think it is probably agreed as the distance between the two fences as being 20 feet, and the distance between the inner end and the buildings is a little over 30 feet; is not that so?—Yes, that is it.

66. Did you observe that outer fence was continued, not only along the road, but I will go first along the left-hand end of the river, as far as the river?—Yes. A

67. Then on the right-hand side, leaving the road again and going up that side of the road; was the fence also continued along there to the end of the river?—Yes. B

68. That is the side fencing—the Midland Railway?—Yes.

69. And there outside the high fence 6 feet 6 inches, is there this post—the railed fence of which you have told my Lord?—Yes.

70. It is the one where the children were standing?—Yes, they were standing there. C

71. Mr. ASQUITH: Your Lordship should have a photograph of that (handing photograph to his Lordship). Is the barbed fence, the 6 feet fence, continued along the back of the property there again to the river, turning round to the left? Do you see that?—Yes, turning round to the river. D

72. Then you spoke of some allotments. The allotments are upon the other side of the river, are they not, from the area occupied by the hospital?—Yes, they are.

73. What is the width of the river at that point?—I think it would be 12 feet, something like that. E

74. I suggest it was 20 feet?—It might be in some places.

75. I am speaking of this place where the allotments are?—Yes, it might be.

76. Is the descent to the river from the area occupied by the hospital made by a steep bank?—Yes. F

77. How high?—It will be about 7 feet.

78. There again I suggest to you the height of the bank is 15 feet, or about 15 feet?—I hardly think it would be that, but I did not measure it.

79. Then I dare say you will not have a very positive opinion about it?—No. G

Mr. ASQUITH: I should like your Lordship to see that photograph showing the particular spot (Handing photograph). The allotment, my Lord, is shown on the right with cabbages and things of that kind, as your Lordship sees, growing there, and the hospital area is on the left. H

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80. Is it only where the river bounds the property, the area of the hospital, that the high barbed wire fence is not to be found?—Yes, the river becomes the barbed boundary there.

—
Mr. F. Parkin.

81. Wherever the fence is, there is the river?—Yes.

A 82. I think you said you made a visit there early in September, did you not—I think that is what you told my Lord?—Yes.

83. How many patients do you say you saw in the grounds?—I do not know what the number would be.

B 84. Tell me roughly, one or two?—I think there were two—well I cannot say what number, I really made no note of that.

85. Were there more than two. You can tell me that, surely?—I think there would be.

86. Are you sure there were more than one?—Yes.

C 87. As to these persons that you saw conversing across the river, are you sure there was anybody else but one?—I think there were some others, but I cannot speak positively on that point.

88. At that time, I think, the inner fence had not been erected?—No, it had not.

Re-examined by Mr. UPJOHN.

D 89. Had the river fence been erected at the date of your second visit?—Yes.

90. That was in November, do you say?—That was in November.

Mr. MATTHEW WOLSTENHOLME, sworn.

Mr.
M. Wolstenholme

E Examined by Mr. UPJOHN.

91. Are you consulting engineer of the Bestwood Collieries' belonging to the plaintiff Company?—Yes.

92. And also the agent under the Coal Mining Regulations Act?—Yes.

F 93. The plaintiff Company is the lessee, I think, of all the mines and minerals in this neighbourhood?—In Bestwood parish, yes.

94. And they own coal works and iron works?—Yes.

95. And a good deal of freehold land?—Yes, 50 acres.

96. That is all the parish, is it?—Yes.

G 97. You employ nearly 1,300 men in the colliery?—Yes, about 1,300—1,289.

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—
Mr.
M. Wolstenholme.

98. Do any of the men whom you employ come from the part to the south of the Small-pox Hospital, the district that we call Bulwell?

—Yes.

99. About how many men and boys come from that part?—You have got it. I think it was agreed upon by both sides. A

Mr. Justice FARWELL: I thought that was agreed.

Mr. UPJOHN: They were in the first document I handed to you, my Lord. However, I will get it from the witness.

100. Have you gone into the matter and made out a list?—Yes, number 346 are outside surface men. B

101. 346 work on the bank, and the rest underground?—Yes, the rest of the men that work at the pit underground.

102. How many of those men come from the district south of the Small-pox Hospital?—About 573 men and boys.

103. Then, of course, your other men come from other parts?— Yes, from Hucknall and Arnold. C

104. And when they come to the colliery then, of course, they mix?—Yes, and others come by train from Nottingham.

105. How are the underground works supplied with air?—By a fan. D

106. With an ordinary shaft shown on the ordnance plan?—Yes, No. 1 shaft.

107. How many cubic feet a minute do you take of air?—About 150,000 cubic feet per minute.

108. That is made to circulate through all your roads?—Through all the workings. E

109. Does it go right round and back to the same shaft, or from the upcast?—It goes down the downcast and comes up from the upcast.

110. You know this neighbourhood and the road by the Small-pox Hospital very well?—Yes, I do. F

111. Suppose any of your men should be patients in the hospital, have you formed any opinion as to the likelihood of their communicating with their fellow workmen as they are passing along the road?

Mr. MACMORRAN: I think that as this is the first time this question has been put, it is the time, my Lord, to raise the objection. This is a quiet time action, not founded in any way upon the manner in which the hospital is conducted, and therefore it is assumed it is conducted in the best possible way. G

Mr. Justice FARWELL: I suppose among the probabilities are the idiosyncrasies of the colliers. I have heard something of that in H

the course of my life. I will take it de bene esse. I think it is admissible. February 10, 1904

—
Mr.
M. Wolstenholme.

112. Mr. UPJOHN : You know something of colliers?—Yes.

A 113. What do you say as to what would take place?—I think the infection would spread.

114. No, you have forgotten the precise question I asked you. If some of the other colliers are attacked by the disease and go to the hospital, and are in the grounds when their mates are walking along the road as they come to the collieries or go home, then what B would happen?—I think there is a possibility of infection.

Mr. Justice FARWELL : You see, you are not called as an expert.

Mr. UPJOHN : Would anything take place between the two men?

C 115. Mr. MACMORRAN : That is rather leading?—They would go and talk to each other.

Mr. UPJOHN : Do not answer this at present, because I do not know whether Mr. Macmoran has any objection to it. Have you considered the probability of what would happen if a number of your D men were stricken with this disease?

Mr. Justice FARWELL : I will take it de bene esse.

The WITNESS : It would spread the disease in the mine if they came in contact with each other, no doubt.

E 116. Mr. UPJOHN : Again you do not understand ; my question to you is not a medical one. If a substantial number, say 40 or 50, of the men were stricken with this disease, have you considered the question of what the other men would probably do?—They would stay away, no doubt.

116A. You think that is very probable?—Yes.

F (Adjourned for a short time.)

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Mr. A. Crawford.

Mr. ANDREW CRAWFORD, sworn.

Examined by Mr. UPJOHN.

117. I think you are the manager of the ironworks part of the undertaking?—Yes.

118. And the ironworks are situated within a quarter of a mile from the hospital, are they not?—About that. A

119. We know how many men you employ at the ironworks. Can you tell my Lord how many men come from Bulwell?—140.

120. Do they come past the hospital?—Yes, they must do so.

121. I think the company own some property at the back of the hospital?—The pumping station. B

122. And Barrow's cottage?—Yes.

123. Is that an important matter for your part of the undertaking?—Yes, it is absolutely necessary.

124. What would happen if it were not worked?—If we were unable to pump water for about 24 hours, we should have to stop the ironworks. C

125. Have you considered what would probably happen to you if Barrow got the small-pox—I mean with regard to that, what you would do at the pumping station?—I think we would find it very difficult to find any one to take his place. D

126. On what terms does Barrow hold the cottage?—He pays rent which is deducted weekly from his wages.

E. Barrow

EDWIN BARROW, sworn.

Examined by Mr. UPJOHN.

E

127. I think you are in the employment of the plaintiff Company?—Yes.

128. And you are in charge of the pumping station?—Yes.

129. That is on the opposite side of the river from the Small-pox Hospital?—Yes. F

130. Do you live in that little cottage at the back of the hospital?—Yes.

131. Does your yard run right up to the fence?—Yes.

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E. Barrow.

132. From your yard can you see the patients in the hospital grounds?—Yes.

133. I think your wife is living with you ; and your son and his wife and their infant?—Yes.

A 134. Your son works at the Bestwood Colliery, does he?—Yes.

135. Do you object to the hospital being so near you?—Yes, greatly.

136. Do you know the caretaker of the hospital?—I do not know his name.

B 137. Do you know him by sight?—Yes.

138. Does he live inside?—I do not know that—he is always there when I am there.

139. What does he do—has he got charge of the gate?—He runs about getting firewood, unlocks the gates, and goes on to the road.

C 140. Does he go inside the building?—Yes.

141. You have seen him?—Yes.

142. And you have seen him at the gates?—Yes.

143. And out in the road?—Yes.

D 144. He is out on the road?—He is in charge of the gates and lets us in and out.

145. Have you seen him out on the road?—Yes, many times.

146. What was he doing out on the road?—Standing there.

E 147. Was he talking to anybody?—Yes, if there is anyone who will stop and talk to him.

148. Have you seen him stop and talk to people?—Yes.

Mr. PARKER : There has been no particulars of this. It is not alleged that the hospital is mismanaged.

F Mr. Justice FARWELL : That is quite true, but you see it is quiet timet and to some extent I must deal with the probabilities, and although there may not be actually patients there it is quite open to the observation that this man would behave like this if there were patients.

G Mr. PARKER : If mismanagement had been alleged we should have particulars and have been able to deny this.

Mr. Justice FARWELL : It is a quiet timet action and ex hypothesi there is no damage.

Mr. PARKER : It is founded on it being almost inevitably a nuisance where it is.

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E. Barrow.

Mr. Justice FARWELL: And that involves the surrounding circumstances, which include proximity of a high road and the possibility founded on past experience that the caretaker will come into the road and talk to people.

Mr. PARKER: I agree, but your Lordship will understand that A
I only wish to protect my clients.

Mr. UPJOHN: I am not putting it as the basis of any claim for damage.

149. Do you know whether there were any patients inside the hospital at the time you saw the caretaker on the road?—Yes, there B
were plenty inside.

150. Did you hear the caretaker say anything to them?—No.

151. Do you remember being in your engine house last January?—Yes, I am in every day as far as that goes.

152. Do you remember seeing any burning going on?—Yes. C

153. Just tell my Lord about that, will you—who was doing the burning?—The caretaker, the man who is the porter, as I call him.

154. Where was he doing it?—It might be about 30 feet from our house—it will be 30 feet.

155. Did you see what he was burning?—Rubbish of some sort D
—bandages or something of that description.

156. You could see it was some material of that sort?—Yes.

157. Have you known of any patients who have died there?—Yes.

158. How do you know that?—I have seen coffins. E

159. Where was that—inside the hospital grounds?—They were inside the hospital grounds. Of course, I did not go in.

160. Where were you?—On the railway bank doing my work at my proper employment.

Cross-examined by Mr. PARKER. F

161. Will you just try and tell me the date when you saw the caretaker on the road?—I have seen him several times on the road during these last two weeks, but as for the dates I have never put them down.

162. I was asking you whether you could give me the dates when G
you saw the caretaker outside the gates?—He does it frequently—he has to open the gates for the purpose of their coming in, and he stands outside the gates sometimes before they come with the conveyances.

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E. Barrow.

163. Where is that?—On the path.

164. And you have seen him open the gates while the carriages came up?—Yes.

A 165. Those are the carriages which bring the doctors and nurses up, are not they?—There is a good road, and there is a pair of gates made of iron, and they have a lock on them.

166. You said just now that you have seen the caretaker going in and out of the hospital; do you mean in and out of the hospital grounds?—I mean in and out of the place itself.

B 167. In the grounds?—Yes, fetching coals in and out, and doing different jobs.

C 168. I do not understand you to say that you have seen the caretaker going into the building?—You can see him running round through the building with a coal-box, and going down the lobby inside of the place altogether.

169. You say you could see patients; where was that from?—From my daily work off the bank, and through the window in a room in my house, I can see the gate when he opens it.

D 170. You mean that, standing in your room, you can see him open the gate?—Yes.

171. And, standing in your room, can you see patients?—Yes.

172. Are you sure of that?—Yes.

173. Standing in your room in your house?—Yes.

E 174. Just look at that photograph and tell me is not that your house? (Photograph handed). That is your house on the left?—Yes.

175. And the windows to which you allude are those windows there?—The one on this side looks over *here* next to the hospital side. This is the front side of the house where the door is *here*.

F That stands on an angle.

176. Do you mean those windows which are there right and left of the door?—Yes.

177. Do you say you can see right up into the building from there?—Yes.

G 178. Are those the windows which you mean that you were looking out of?—It is the window on the other side of the house.

179. On the right-hand side of the door?—Yes.

H 180. Do you mean the window looking out at the other side of the house?—Yes.

181. There is no window at the end of the house, I see?—No.

182. When you refer to the window that you can see from right up into the hospital, you mean the window on the other side of the house?—There are only two sides of the house—each side has

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got two windows. There are two windows on one side and two on the other—two at the front and two at the back.

183. You mean the back windows?—Yes.

184. And you say from there you can see right up to the door of the hospital, and you can see the patients of the hospital and people walking about?—Yes. A

185. Tell me when it was you saw those patients?—I have seen them four or five times a week, and sometimes more than that.

186. Where is that?—That is on the side next to our house—between the hospital building and our house, where they do the exercising business. B

187. How far away from you?—About 30 yards.

188. Thirty yards from your house do you mean or 30 yards inside the fence?—Just inside the fence. My house is only about two yards from the fence. C

189. How high is the fence there?—I can see over it off the doorstep—it might be 6 ft. 2 in. or 6 ft. 3 in.

190. How far might you be away from the fire at the time you saw it?—I should think about 40 yards.

191. Do you mean to tell me that at that distance you could distinguish what was being burnt?—Sometimes it almost chokes you with smoke. D

192. And through the smoke you can see exactly what is being burnt?—Yes, I saw him put it down before he lighted it.

193. At 40 yards?—Yes. E

E. Hill.

EDMUND HILL, sworn.

Examined by Mr. UPJOHN.

194. Do you live at Bulwell?—Yes.

195. And are you employed at the plaintiffs' Colliery?—Yes.

196. Are you foreman check weigher?—Yes. F

197. How do you get from Bulwell to the Colliery?—By the highway, past the hospital.

198. You walk past the hospital, do you?—Yes.

199. Have you ever seen any patients in there?—Yes.

200. Where were they?—They were walking about the grounds. G

201. Have you seen a patient there whom you happened to know?—Yes.

202. What was his name?—Robinson.

203. Was he suffering from small-pox?—Yes.

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204. Was his wife with him?—Yes.

205. She was a patient too?—Yes.

206. Do you remember seeing them inside the hospital fence?

E. Hill.

—Yes.

A 207. Where were you?—I was riding on the 'bus.

208. What was Robinson doing?—He was walking alongside his wife.

209. Did you hear him doing anything?—No, I did not hear him doing anything.

B 210. Did you know anybody who was passing along the road at the time?—There was me and my colleague—not exactly my colleague, what we call the guardsman.

211. Did any conversation take place which you heard?—Not betwixt him and Robinson.

C 212. But between Robinson and any one else?—Betwixt Robinson and his wife—they were in conversation. I could tell that by their movements.

213. Was Robinson speaking to any one in the road?—No, not at that time; there was some one shouting to him from the 'bus, but

D I did not hear what he said back.

214. That is what I wanted you to tell my Lord about—some one on the omnibus shouted to him?—Yes.

215. Did he shout back?—He moved round, but I did not hear exactly what he said.

E 216. Did he make some reply?—Yes, he made some reply.

217. Did you see his face?—Yes.

218. What was the condition of it?—You could see traces of some disease—it was very discoloured.

F 219. Can you fix the month when this occurred?—I believe it was in the second week in August if I remember rightly.

220. In August last year?—Yes—I would not be quite certain as to that.

221. It would be in the afternoon?—Yes, a quarter to five or five o'clock.

G

GEORGE MARRIOTT, sworn.

G. Marriott.

Examined by Mr. UPJOHN.

222. Are you foreman bailiff in charge of Forge Farm?—Yes.

223. That is on the opposite side of the road to the Small pox Hospital?—Yes.

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G. Marriott.

224. Your employers are the Coal and Ironworks Company?
—Yes.
225. What business do you carry on there—do you sell milk?—
Yes, we go round with milk night and morning to the cottages.
226. How is the milk taken round?—It is taken round by one A
of the servants.
227. By hand?—Yes.
228. Where does he go?—Round Bestwood cottages and the
cottages just near.
229. Is that getting on towards the mill?—Yes, just on the left- B
hand side of the bridge—through the Midland Company's bridge.
230. I am afraid that does not convey very much. Do you know
Mr. Loweth's place—is it in that direction?—Yes. Starting just
from these new houses, about 100 yards away from the hospital.
231. 100 yards nearer to the ironworks?—At these new cottages, C
a long way before you get to the ironworks.
232. Does he deliver the milk down at Moor Bridge cottages?—
No.
233. You do not supply down there?—No, they fetch it from
there; the children fetch the milk from our place to these cottages— D
we do not convey it there.
234. The people who live at Moor Bridge cottages buy their
milk from you, and the children fetch it?—Yes.
235. What do they fetch it in?—In tin cans.
236. Do you sell any other provisions there?—No, nothing but E
milk.
237. Do you remember being out in the road by the hospital and
seeing a couple of women one evening?—Yes.
238. It was in the evening, was it?—Yes.
239. Whereabout was that?—Just where the boarding runs F
down on the side of the pumping station road, and on the angle that
comes up from the main road for Bulwell. Those two women and a
girl stood there on the 4 ft. fence that leads to the pumping station.
240. What we have called the post and the rail fence?—Yes,
they stood up talking to a man inside who was suffering from small- G
pox.
241. Could you see them?—Yes, I was about twelve yards away,
I was just at the bottom. I heard the conversation. They had a
basket with some provisions in it of some kind—I could not say
what kind—and they passed it inside to the man who was inside. H
He was just in the corner talking to them. They gave the basket to
him inside and he gave it to them out again, and they stood talking
there for half an hour. That was on August 15th. I saw that on
another occasion after that.
242. You saw one of the women again?—I saw them all again.

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G. Marriott

243. What happened then?—They were holding a conversation with him the same as before—they stood on the rails, and he stood just in the corner again.

A 244. Just in that little angle?—Yes, there was no barbed wire on then.

B 245. Have you on other occasions seen people on that post and rail fence looking over?—Yes. Last Sunday morning, of all others—the 7th of the month—a cab drew up with provisions just before eleven. The two that sat on the front got off and handed provisions out of the cab inside to the hospital. They passed them inside the door to patients. When they had done that they began running round. The boys and girls were playing with the driver, and shouting and squealing.

C 246. They were inside the grounds?—They were all inside—the cab too—just inside the door.

247. Oh, the cab was inside?—Yes, that was just before the doctors came. It was just before 11 o'clock, and another gentleman and I said, "Look at that," and they were running and playing in that way.

D 248. Do you know the caretaker or porter?—No. I do not know the caretaker, but from the bottom there you can see all over the grounds. It is on a level at the bottom of our bridge—not 40 yards from my house, and you can see all over the grounds, and everything that is going on inside from the outside, without going on to the fence at all.

249. From the place outside?—From just against the bridge. You have no occasion to go anywhere. You could see and hear them talking before they put this temporary fence up to keep them away at the bottom end. The fence has only been done recently.

F 250. Do you know this caretaker by sight?—No, I do not know him.

Cross-examined by Mr. ASQUITH.

251. I understand that when you saw the basket passed over, it was in August?—Yes, on the 15th.

G 252. At that time there was no barbed wire over the fence?—Not at all.

253. It would not be possible to pass a basket over now?—Yes, it would be.

H 254. But you would have to encounter the barbed wire if you did so?—No; it is only a matter like this (describing the position).

255. You think that is not sufficient?—Yes; I live pretty near, and I know the things that go on near my house.

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G. Marriott.

256. Last Sunday did some people come up in a cab?—Two gentlemen sat on the cab and brought provisions.

257. Was the cab not an ambulance or brougham belonging to the hospital?—No.

258. Are you sure?—Yes. A

259. What sort of cab was this?—An ordinary cab with a bay horse, I think.

260. What o'clock was this?—Before 11 o'clock.

261. Well, go on?—These two gentlemen sat on the front when they drove up to the door side of the way where the patients walk round—on the side where they have got the temporary fence. B

262. Wait a moment. Where was the place where the cab entered?—At the entrance in the Bulwell Road.

263. That is the gate?—Yes, it has two doors.

264. In the outer fence?—Yes. C

265. Did it go through the gate and the outer fence, inside?—Yes, through, up to the hospital door.

266. Did it go through the inner fence?—Yes.

267. Through the gate there?—Yes.

268. Where were you?—On the side just at the corner against our bridge, not 100 yards away. You can see everything that is going on, because you are on a level. D

269. Now, tell me, what did the two gentlemen do?—One got off from the cab and opened the door, and handed the things just inside the hospital; it is where the patients come in and out. E

270. Who was inside the cab?—There was no one.

271. No one?—No.

272. Two gentlemen were riding on the box and nobody inside?—He had several parcels to hand out and put them inside the hospital. When he had done putting them outside—there was some one on the top of the hansom—or rather the four-wheeler— F

273. I did not hear the last part of your sentence?—When he had stopped putting the things out he started to run round and to speak inside to the other gentleman who was with him.

274. Never mind that, we cannot have that. To whom did they hand the things?—I did not see anyone inside, but they put them inside the door. G

275. Inside the hospital door?—Yes, inside the hospital door.

276. That is all you saw, was it?—Yes, that is all I saw.

277. Then they drove off again?—No, they stood there, and I went away. I was waiting with a gentleman to go down at the bottom when this occurred. H

278. You did not see them drive off?—No, I did not, but I saw that done before they did drive off.

279. What about the children—you said something about children?—Yes, there were children inside. February 10, 1904

280. Inside where?—Inside the grounds. I suppose they had been in for small-pox. G. Marriott.

A 281. They were patients?—Yes.

282. Were they inside the fence?—Yes, inside the fence, and the cab also.

283. Inside the inner fence?—Yes, just opposite the hospital.

284. You did not see the cab drive away?—No.

B 285. And you did not know who the gentlemen were?—No.

286. And you did not know what the things were that they were handing in?—No, but they looked like a kind of provisions.

287. Hospital stores?—I have seen them coming regularly with a cab and going out again, but it was on the Sunday morning that I

C saw that.

FRANK LYNES, sworn.

F. Lynes

Examined by Mr. UPJOHN.

288. I think you are a carman at the Forge Farm?—Yes.

289. You know the hospital grounds with a fence round?—Yes.

D 290. Have you ever seen anybody in the road—either the main road or the back road—doing anything on the fence?—I have seen a woman bringing children and putting them on the top of the fence—two children.

E 291. Where was the fence she was putting them on?—On the bottom side of the hospital.

292. Do you mean in the main road or the road leading to the pumping station?—On the main road.

293. What did she do with them?—She put them on the top of the fence.

F 294. Do you mean she held them up?—Yes.

295. Did you hear some conversation between them?—Only I heard her say: "Can you see anybody?"

296. What was the child doing when he, or she, was held up? She was looking over into the hospital yard.

G 297. Have you seen people doing that on other occasions?—No, only on that one occasion.

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Cross-examined by Mr. ASQUITH.

F. Lynes'

298. When was that?—That was on the 23rd August.

299. There was no barbed wire on the fence then, was there?—
No.

Mr. T. A. Loweth

Mr. THOMAS ASKEW LOWETH, sworn.

A

Examined by Mr. UPJOHN.

300. You are one of the plaintiffs?—Yes.

301. Do you live at the Corn Mills, Bestwood, that we see on
the map?—Yes.302. And I think you are the tenant of the mill, the dwelling- B
house, and of some cottages—three cottages?—Yes, that is right.303. First, I will ask you what happened once when you were
going round the hospital. Do you remember going round the hospital
grounds with Mr. Robinson, your co-plaintiff, and two other gentle-
men?—Yes. C304. Can you give me the month?—I really could not. They
can supply the month, but I was with them at the time.305. Was it this year or last?—It was this year, of course—
oh no, last year—I mean last back end. I have been round several
times, and I might possibly get mixed in the two dates; that is all. D306. Try and keep clear. Tell us who were with you?—Mr.
Paterson, Mr. Robinson, Mr. Barrow and Mr. Parkin.307. It was one of the occasions when Mr. Parkin was there?—
Yes, that was the first occasion.308. Did you go into Barrow's cottage?—I went outside the E
house, but not inside—into his yard.309. From there could you see anybody in the grounds?—Yes,
I saw a patient and spoke to him. We also saw a nurse and a little
child—a patient that would be.310. A little child who was a patient?—Yes, and the nurse was F
gathering blackberries. It was blackberrying time.311. Were they within speaking distance?—Yes, we spoke to
them and to the nurse too.312. How far were they off?—The nurse was coming over, and
Mr. Paterson said, "Are we safe?" and she said, "Well, I hardly G
know," and she stopped. She was a bit suspicious, or else I believe
she would have come right up to the fence.

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Mr. T. A. Loweth.

313. Then did Mr. Paterson or one of you have some conversation with her?—Yes.
314. Then you mentioned a patient in the hospital?—Yes, a male patient.
- A 315. How near did he come to you?—He came very near.
316. Was there any conversation with him?—Yes, we asked him how he was getting on and so on, and there was lots of talk to the same patient.
- B 317. You were in Barrow's yard and they were on the other side of the fence?—Yes.
318. Have you done that with anybody inside the hospital grounds since?—I have seen lots. After the outbreak I have seen, standing in my house in the dining-room, from where we can see the grounds, droves of people blackberrying. That was after the first epidemic. This is the last one. There was one slight one before.
- C 319. I am afraid you do not follow my question. Have you seen people in the grounds when you have been close, so as to speak with them?—I have never spoken to them except on that occasion, but it could have been done if I had wished.
- D 320. That is what I am asking?—Oh, yes, lots of times.
321. Now, I think there are some 16 persons living in your house?—And cottages.
322. That includes your cottages?—That includes my cottages.
323. Is there much traffic to your mill?—There is a good deal
- E at times.
324. First of all, do people come to buy things from you?—Yes.
325. Yours is a corn mill?—Yes.
326. You sell flour, I suppose?—Flour and all kinds of corn.
- F 327. Do people come to you to fetch it or do you send it out?—Some come to fetch it. The bulk of it we send out, but there are parties who come and buy it.
328. Where do you send it to?—Chiefly to Hucknall and Bulwell.
329. Hucknall is in the other direction?—Yes.
- G 330. Which way does your cart go into Bulwell?—Both ways at times occasionally. When we have to go the forest way we go that way—we have to do it sometimes the other way. We go both ways. There are two ways to my place. There is a yard and there are two roads up.
- H 331. There is a road in front of the hospital and another road?—Yes, there is another road a little further back passing it another way on the opposite side.
332. Do your carts sometimes go one way and sometimes another?—Yes, they have to.
- I 333. What do you say about the traffic along that road—I mean

February 10, 1904 the main road in front of the hospital ?—There is a lot of traffic—a tremendous lot.

Mr. T. A. Loweth 334. If people want to go to Mr. Walker's bone and manure mill they would come past you, would not they ?—Yes.

335. And are there many people going to that mill ?—Yes, a lot at times—a lot of carts. A

336. Does Mr. Walker send out carts from there ?—A siding lies there on the Great Northern, and he has to pass it every time he goes to that siding. Part of his stuff goes to the Great Northern siding, and every time he goes to the siding his man has to pass the hospital on the near side. B

337. Besides the traffic to you and to Mr. Walker's place, and the traffic we have to the ironworks and the colliery, is there a lot of general traffic along the road ?—There is a lot of general traffic.

Cross-examined by MR. ASQUITH.

C

338. The only time you ever conversed with a patient was on this occasion when you were at Barrow's cottage ?—Yes.

339. That was in August, was it not ?—I should say that that is the time—I can find out if it is necessary.

340. Do you think it was in August or was it later ?—I should think it would be about August. I have not been careful to keep the dates, because it was so regular. D

341. There is no road up to Barrow's cottage ?—Yes.

342. A public road ?—It is not a public road, but it is their road down, and the public go down occasionally to see Mr. Barrow. E

343. People who are going to call on him ?—Yes, and for other purposes.

344. You do not suggest that there is any public road or foot-path by Barrow's cottage ?—No, no public road, it is a private road.

345. Did you know the man whom you saw across the fence and whom you say you talked with ?—I did not know him. F

346. How came you to enter into conversation with him ?—We were looking round the hospital ; we were very indignant at their putting the hospital there, and we were looking round.

347. Did you think he was a person suffering from small-pox ?—We saw he was, else he would not be there. G

348. Why did you enter into conversation with him ?—Because we wished to know whether such a thing was done. There was a deal of report about it being done.

349. I want to know why you entered into conversation with a small-pox patient whom you saw on the other side of the fence ?— H

Because there was a report that it was regularly done, and we wanted to see if it was done. February 10, 1904

350. How did you test it?—I asked him how he was getting on, and whether he was suffering from small-pox, and he said "Yes." Mr. T. A. Loweth.

A 351. Did he tell you he was convalescent?—No, he said he was getting better.

352. Did he tell you he was better?—No, he was getting better.

B 353. Did you know or enquire whether he was a person who had been discharged from the other hospital, and had come there in his time of convalescence?—Oh, no; he was getting better, no doubt, because I had heard of the same man—I could not tell his name—being in some time before.

354. Your mill is a corn mill, is it not?—Yes.

C 355. When you are taking your corn or flour or whatever it is to Bulwell—tell me where I am right—I should judge from the map that your natural course is not to go near the hospital at all?—It depends on circumstances.

D 356. Supposing you are taking the shortest road?—We supply stuff to these 22 houses three or four times a week, and we are obliged to go that way to get to them.

357. That is not what I am talking about. I am talking about the village of Bulwell. Supposing you are sending supplies to Bulwell, you would not go near the hospital at all?—Yes, we would.

E 358. Which is the nearest way to go to Bulwell—past the hospital?—The buildings.

359. Where are they?—In that direction.

360. Do you say that that is the shortest way?—Certainly, most decidedly, we consider it so.

F 361. With the exception of those buildings as you call them is there any other part of Bulwell to reach which it would not be the shortest way to go by the other road?—No, we chiefly go by the other road, except when circumstances take us that way.

G 362. You said something about the bone and mauure works—what is the name of the gentlemen who keep them?—J. and T. Walker.

363. Are they here?—No, I do not think so.

Mr. UPJOHN; We asked them to come.

Mr. ASQUITH: Then we do not know what their views are of this.

H Re-examined by Mr. UPJOHN.

364. You supply your goods to the people in these 22 cottages, do you?—Yes.

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Mr. T. A. Loweth.

365. Do you supply any one else along that side of Bulwell?—
There are several people in the buildings we occasionally supply, and
we have to go that way. Occasionally we have to use the Great
Northern siding, and we have to go that way then. I wished to
explain it, that is all.

A

Mr.
W. E. Robinson

Mr. WILLIAM ENGLISH ROBINSON, sworn.

Examined by Mr. UPJOHN.

366. Are you one of the plaintiffs in this action?—Yes.

367. I think you live at the school house at Bestwood, and you
are master of the Bestwood Parish School?—Yes.

B

368. Do you and your family live at the school house?—Yes.

369. And I think you are also clerk to the parish church?
—Yes.

370. This school is beyond a quarter and within half a mile from
the hospital?—Yes.

C

371. I think the Parish Council had a meeting about this?—
They had.

372. Before the hospital was built, and at the time the hospital
was being erected, I think you heard a rumour of what it was going
to be used for?—Yes.

D

373. Did they pass a resolution about it?—Yes.

374. And you sent that to the Corporation, did you?—Yes.

375. That was, I see, on the 23rd January. You protested
against the hospital being erected?—That is so.

376. And I think you had some correspondence with the Town
Clerk and the Corporation?—We had.

E

377. I think you were present with the last witness and Mr.
Parkin, the surveyor, on the 3rd September, were you?—I was.

378. I think Mr. Loweth joined you when you went to Barrow's
cottage, not before?—Yes, that is so.

F

Mr. UPJOHN : I do not know, Mr. Asquith, if you mind my
taking this shortly?

Mr. ASQUITH : No.

379. Mr. UPJOHN : You heard what Mr. Loweth said just now

about the conversation with the nurse and also with the patients when you were in Barrow's yard?—Yes. February 10, 1904

380. Do you agree with his recollections?—Except that Mr. Loweth said that it was in the month of August. It was in the early part of September, I think, when we had the conversation. Mr. W. E. Robinson.

381. Before Mr. Loweth joined you in Barrow's garden or yard had you been in the road in front of the hospital with Mr. Parkin and Mr. Paterson?—Yes.

382. Had you seen the same man then?—Yes.

383. Was it the same man who came afterwards to Barrow's?—Yes.

384. Did you have any conversation with him before Barrow?—Yes.

385. Where was that from?—From the allotment gardens.

386. Were there any men working in the gardens?—Yes, there were two, I think.

387. When you went to the gardens and saw the two men was anything going on between them and the patient?—Yes, they were talking to each other.

388. Across the stream?—Yes.

389. And did you or Mr. Paterson have any conversation with him?—Mr. Paterson did. I did not.

390. That would be from the allotment gardens?—Yes.

Mr. ASQUITH: When was that?

391. Mr. UPJOHN: That was the 3rd September, you say?—I am not certain about the date, but it was in the early part of September.

392. You are quite right. You did say the early part of September. It was after that that Mr. Loweth joined you, and you went to Barrow's and had a conversation there?—Yes, that is so.

394. Have you on other occasions seen patients out in the grounds?—I have seen them when I have been passing in the train.

395. But not had any conversation from the road, or any other part?—No, I have kept a discreet distance.

396. Are you familiar with the road in front of the hospital?—Yes, I know it very well.

397. Is there much traffic along there?—Yes, a very large amount of traffic.

398. Have you considered what may happen to the children in your school?—Yes, I have.

399. Have you come to any conclusion as to what will probably happen to them?

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Mr. ASQUITH : We cannot have that.

Mr.
W. E. Robinson.

Mr. UPJOHN : We considered that this morning, and my Lord is taking it de bene esse.

Mr. Justice FARWELL : It saves time in the long run, Mr. Asquith. A

Mr. ASQUITH : If your Lordship pleases.

The WITNESS : I have considered this from the fact of some of my pupils residing near the Forge Mill cottages, which are only some 90 or 100 yards away from the hospital, and that a number of others have constantly to pass to and fro Bulwell. Considering the rather loose way in which to every appearance the discipline of the hospital is maintained, if I may term it so, the children have been naturally curious, and they have loitered about the footway when patients have been brought in and out. B

400. You have not seen it?—No, I have not seen it, but it is the common talk of the neighbourhood. C

401. Mr. ASQUITH : You must not tell us the common talk. Tell us what you have seen?—There is great danger of the children contracting disease.

Mr. Justice FARWELL : This is what usually happens when I take anything de bene esse. D

Mr. ASQUITH : My Lord, this is de bene esse, indeed.

402. Mr. UPJOHN : Do any of your children come from Bulwell?—Not from Bulwell.

Cross-examined by Mr. ASQUITH.

E

403. I believe you told us that you kept at a discreet distance?—Yes.

404. What were you doing on the occasion of the 3rd September; how came you to be at Barrow's cottage, so close to this centre of infection?—Mr. Paterson called at my house to enquire about the hospital. F

405. Who is Mr. Paterson; is he clerk to the plaintiffs' solicitors?—I suppose he is.

406. But you know he is, do not you?—No, I do not.

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407. What did you suppose he was?—That he is in the employ of Messrs. Wells & Hind, but in what capacity I do not know.

408. He is in the employment of the plaintiffs' solicitors?—
Yes.

—
Mr.
W. E. Robinson.

A 409. He came to you; what did he say?—He said, would I show him where the hospital was, and so I took him down.

410. You took him to Barrow's cottage?—No, I did not take him to Barrow's cottage first. We walked along the roadside, and past the hoardings which had been erected. Mr. Paterson said, "Can we walk all round the premises?" I said, "Yes, we can get down through the allotment gardens"—whilst we were in the gardens we saw the two men there at work and talking to this man on the hospital side.

C 411. I want to know how you got to Barrow's cottage—what took you there—who suggested that you should go to Barrow's cottage?—Simply in the walk round the hospital grounds.

412. Who suggested you should go there—did you suggest it?—No.

413. Did Paterson suggest it?—No.

D 414. Did Loweth suggest it?—No.

415. Were you surprised to find Loweth there?—No, we were walking on the railway embankment close to where Mr. Barrow's engine house is, and whilst we were talking there Mr. Loweth joined us.

E 416. Quite a coincidence, was it?—Yes.

417. It was not a previous appointment so far as you know?—No.

418. Then you went through Barrow's cottage?—Mr. Barrow was in his engine house, and took us down through the grounds.

F 419. And then you looked over the fence?—Yes.

420. You saw the same man and nurse?—Yes.

421. And you entered into conversation?—I did not. Mr. Paterson and Mr. Loweth did.

422. You were more cautious, but the others did?—Yes.

G 423. That was all?—Yes.

424. You have never done it since?—No, I have not been up to the hospital on foot since.

425. Only that day you went in the train?—Oh, I frequently go past in the train.

H 426. And that is the extent of your knowledge?—Yes.

427. You say you are a schoolmaster?—Yes.

428. Where is your school?—It is a little over a quarter of a mile, but not quite half a mile, from the hospital.

429. Where is it on the map?—It is on the roadside leading from Bulwell to Mansfield.

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Mr.
W. E. Robinson.

430. Mr. ASQUITH : Your Lordship will see outside the half-mile circle two buildings—one called a school and the other a mission-house. Is the house you live in at the school?—It is close to it.

Mr. UPJOHN : Does your Lordship see Bestwood Colliery marked at the right side ? A

Mr. Justice FARWELL : Yes.

Mr. UPJOHN : A little further north of that you will see the mission-house and school.

Mr. Justice FARWELL : My copy stops short just at the colliery. B

Mr. ASQUITH : If the suggestion is that this is within the half mile circle it ought to be on your Lordship's map.

Mr. Justice FARWELL : I understand that is the suggestion.

Mr. UPJOHN : I could not find it on the map ; I think it is within the half mile. If your Lordship has the Admission it is 847 yards measured from the fence according to our plan, and was just under the half mile, and 960 yards measured in accordance with the defendant's method, so that would make it over the half mile. C

431. Mr. ASQUITH : If our measurement is correct it is outside the half mile. How many children are there in the school?—From 130 to 140. D

432. Have any of them suffered from small-pox since the hospital went there?—Not that I know of.

433. Do you know of any cases amongst the colliers or the men working at the ironworks at Bestwood of small-pox?—No. E

434. The hospital has been, has it not, in full operation, at any rate since the beginning of November?—That I cannot say.

435. Has it not—surely you know that?—No, I do not know. Cases have been there intermittently.

436. According to your story there was a man there from as far back as August?—Yes, there was. F

Mr. UPJOHN : True, but one man does not make the hospital in full operation.

437. Mr. ASQUITH : I thought we heard from the last witness about doctors and patients. Do not you know that the hospital has G

been open since the beginning of November?—Yes, for the reception of patients. February 10, 1904

438. And, so far, these apprehensions of yours as to the health of the children have not been realised?—I am pleased to say they have not been. Mr. W. E. Robinson.

Mr. Justice FARWELL: Have you finished that class of evidence, Mr. Upjohn?

Mr. UPJOHN: Yes, my Lord.

Dr. JOHN CLOUGH THRESH, sworn.

Dr. J. C. Thresh.

B Examined by Mr. UPJOHN.

439. I think you are a Doctor of Science of the University of London, Doctor of Medicine of Victoria University, that you hold a diploma in Public Health in the University of Cambridge, and are you Lecturer on Public Health at the London Hospital, examiner at the University of London, and Medical Officer of Health for the Essex County Council?—Yes.

What view do M. A. B. take of his evidence?

440. You became the medical officer of health for the county in the year 1890?—Yes.

441. Have you since that made a special study of small-pox?—
D Yes. Soon after that small-pox cases began to occur in the county, of course I assisted in investigating the origin of them.

442. Have you taken part personally, by seeing patients, examining into the cases and going to the locality and examining the locality, in finding out all you could about the origin of the disease?
E —Yes, from the very commencement I daresay altogether I have seen 3,000 cases of small-pox.

443. You are familiar with Dr. Power's investigations into the subject?—Yes.

444. I suppose all medical men who are interested in this subject are familiar with those investigations?—Yes, his work is generally taught as part of the curriculum in public health—his investigations are now a kind of classic on the subject.

445. They are accepted as correct?—Yes, you never hear them doubted outside the Law Courts.

G 446. Before I go to the particular experience you have had, did

? reference hospitals in Essex.

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—
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you familiarise yourself in the usual way, through publications in the Lancet and papers at scientific meetings and so forth, with the details of outbreaks at other places, and how they were dealt with?—Quite so. I have studied outbreaks practically in all parts of the kingdom from the time I was first confronted with the difficulties of accounting A for cases occurring in certain parts of Essex. In order to account for them I had to study the way in which outbreaks had spread in every other district where I could get any information.

Mr. UPJOHN : I think for the present, until I direct your attention to another subject, we will deal with your experience in the B Orsett district. I think you have prepared some chart and tables which will assist my Lord in following your evidence, Dr. Buchanan—not the gentleman I mentioned before, but his son, who is now a medical officer of the Local Government Board—has written a long C paper on this subject, and he has appended to it a plan, and I think I will hand that to your Lordship (same handed). There are two in that, and I think the one opposite page 22 is probably more convenient, as it is on a larger scale.

447. Can you tell my Lord in what year the Metropolitan Asylums Board established, I think, three hospital ships somewhere D off Gravesend?—Yes, opposite Purfleet and the Kent coast—in 1884.

448. Those are quite opposite Purfleet?—Yes.

449. Purfleet is a district of West Thurrock?—Yes. West E Thurrock is a large parish. There are two centres of population—West Thurrock village and Purfleet, Purfleet being the most westerly portion of the parish, and the nearest to the small-pox ship.

450. West Thurrock itself is a parish of this Union, called Orsett?—Yes. F

451. Will you tell my Lord what was the first occasion on which your attention was directed to this Orsett district after you were appointed?—In 1892, when a number of cases occurred in that district, and the medical officer of health communicated with me, I went down there. G

452. Is that Dr. Corbett?—Yes. There was a question whether some of the cases might not have originated at the paper mills, and been infected by the rags from London.

453. I do not think you came to any determination on that case?—No, we did not. During that year most of the cases that occurred H in the county were in that district. That was in 1892.

454. I think then that it was you set seriously to work to study the subject?—Yes, I directed my attention to it. But the more

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serious outbreak which followed in 1893 of course caused me to give more serious attention to the subject still, because I saw that it was a serious matter.

455. Tell my Lord what was the outbreak in 1893?—During that year there was a certain number of cases which occurred throughout Essex. Altogether I find from my records 185 cases occurred in that portion of the county outside Orsett Union. In the Orsett Union there were 53 cases—that is to say, about a quarter of the cases occurred in that particular union, whereas their proportion would probably have been one fiftieth. But on investigating those cases one could find no obvious cause for the prevalence there. In other districts, if a case or two were introduced, by removing the case and disinfecting there was no difficulty in eradicating the infection; but here, whatever was done, and however prompt the measures that were taken, case after case occurred throughout the whole time.

456. Did you personally go to the place?—Yes, on several occasions.

457. Now you told my Lord that there were 53 cases in Orsett. Can you distinguish how many of those arose in the parish of West Thurrock?—Out of 53, 31 cases were in West Thurrock; that is to say, a very excessive proportion of the cases were there.

458. On that occasion did you come to any determination as to the source of the infection?—The only conclusion I could come to was that there was some source of infection there which was continuous and which did not exist in other parts of the county, and the only possible explanation seemed to be the proximity of the small-pox ships.

- Mr. UPJOHN: My Lord, we have in court a statement from the Metropolitan Asylums Board showing what was going on on the ships, but my friend is not able to admit it. We have asked the Metropolitan Asylums Board to send some one to attend with the originals. Perhaps my friend will not mind my asking this question, and if I do not get the proper evidence from the Board, of course, I admit it will not be evidence.

459. Can you tell my Lord in this year, 1893, in this very serious outbreak you have spoken of, how many cases were being treated on the ships?—Yes, I really have got a record which was taken from the figures of the Metropolitan Asylums Board.

460. They publish their figures, do they not?—Yes.

Mr. UPJOHN: Do you really wish to put us to the expense, Mr. Asquith, of getting these?

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Mr. ASQUITH : If this gentleman says they are the figures of the Board I will take them.

461. Mr. UPJOHN : They are published by the Board, are they not?—I have taken it from them.

462. Mr. ASQUITH : Yes, certainly, I will take it if you will kindly tell me the page?—It is the second table, page 120. There are two tables. The first goes from 1884 to 1893. Then the second is from 1893 to 1901. A

463. We are dealing with the first one, the one on the left-hand corner?—The left-hand top corner. B

464. Mr. UPJOHN : Now, about this year 1893, you made a note at the foot of the cases occurring during the year?—Yes. If you refer to the previous one you will see it. When we have very few cases in the small-pox area is where we have no cases in the district. Then we come to 1892. C

465. There is a note there at the first page, that is as to what is going on on the ships, and your note states how many cases there were in Orsett.

Mr. Justice FARWELL ; Would it not be enough to ask the witness if these are correct? D

Mr. ASQUITH : If my friend would ask what is the Orsett district.

The WITNESS : The Orsett Union. It includes the Orsett Rural District with the Grays Urban District.

Mr. ASQUITH : It is not the one which is a copy here of Dr. Buchanan's. This is coloured blue. E

The WITNESS : That does not include it all.

Mr. ASQUITH : I think it does.

466. Mr. UPJOHN : What does it include?—It includes a considerable number of parishes, West Thurrock, Grays, and so on. F

467. Have you a list of them?—Yes.

468. Is there a list in your book?—Not in this book. No.

469. Have you a list that we can agree, because I know it is a long one?

Mr. ASQUITH: If he will tell us whether it includes anything more than is on the map that will do, I think.

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The WITNESS: I think it does.

470. Mr. UPJOHN: Have you got Dr. Buchanan's report?
A Will you look at your copy, page 2, and tell me whether it includes more than is shown there?—You have got the most populous portion, but there is a village or so just to the north.

Mr. UPJOHN: My Lord, I think I can save trouble. My friend reminds me that I am going to hand up directly as part of
B the witness's evidence a table that he has prepared which contains the names. Will you look at your Table A?

471. Mr. Justice FARWELL: If you will tell me the list approximately of the district that gives me a much better idea than a list of the names where I do not know anything about the popula-
C tion?—With the exception of about two parishes it includes the whole of the district. It is only a portion very thinly populated that is left out. It is practically the whole.

472. Mr. UPJOHN: Then that is the map opposite to page 2 of the report of the 1st of December, 1902?—Yes, that is it.

D 473. Now opposite to page 120 of your book you have two sheets, being an appendix, have you not?—Yes.

474. Let me understand what those are. In the columns you have shown lists of admissions, discharges and numbers under treatment on the ships?—For the first two years the Asylums Board
E made up their returns fortnightly, and afterwards you will find they have been made up weekly.

475. As to those figures that are included in those columns, are they taken from the returns of the Metropolitan Board?—Yes, the figures relating to the admissions and discharges of the patients on
F the ships are taken from their return of figures relating to cases of small-pox which occurred in Orsett. They were taken by me from the clerk's books at Grays.

476. The clerk of the council or the local authority?—Yes, the clerk of the council.

G 477. Mr. ASQUITH: The clerk of the authority at Grays?—The clerk of the Orsett rural district.

478. Mr. UPJOHN: The columns are correct from the Metro-

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politan Board, and the statement at the foot is correct from the clerk of the authority?—I think so.

479. That applies to both sheets?—Yes, to both sheets.

480. Mr. Justice FARWELL: There is one thing I do not quite follow as to the second one in 1885. There is nothing on this to show during what part of the year they are taken?—I could not get the dates. At that time the Infectious Diseases Act was not in force, and I had simply to get the names and numbers. A

481. Then 1901, is there anything to show the number there?—Yes, one of the tables gives the dates. It is Table B. B

482. Mr. UPJOHN: Are you able to say the dates of the Orsett outbreaks in any case before you became the medical officer for the county?—No, I am not.

483. Can you give us the dates since?—Approximately. Yes.

484. Shall we take the first in 1892?—They extended from April throughout the year until December. C

485. That is 1892?—Yes.

486. In that year there were, I think, nine cases in Orsett; is that right?—Nine cases in the whole of Orsett Union. Yes.

487. And 24 in all the rest of the county?—Twenty-four in all the rest of the county. D

488. In the next year, 1893, that is the year we have just reached, what was the date of the outbreak then—I mean in the Orsett district?—Throughout the whole of the year from February to December. E

489. Fifty-three cases?—53 altogether.

490. Twenty-one in West Thurrock?—21 in West Thurrock, and out of the 21 nine of them were in the small group of houses at Purfleet.

491. I think you have prepared a table showing the distribution of small-pox cases in Orsett Union, when there were any, from 1891 to 1902 inclusive?—That is Table A. F

492. And you have also shown the number of cases in the remainder of the county?—Yes, I have.

493. There is a document called "Tables" in Dr. Thresh's proof, and that has Table A. It is in manuscript. Have you got Table A?—Yes. G

494. Is that correct both as to Orsett Union and the remainder of the county?—Quite so.

495. Then, I think, at the foot you have done a little more analysis. You have taken the period 1892 to 1895, and that includes the 1892, 1893, and 1895 outbreaks?—Yes, it includes what I call the epidemic period from 1892 to 1895, and then the second period from 1901 to 1902. H

496. Here you have given us Purfleet separately, West Thurrock and Grays; Grays is an Urban District within Orsett?—Yes, and

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many people who work in the Orsett District come from Grays, and there is a good deal of traffic backwards and forwards, so I kept that separate.

A 497. The remainder of the Union means the remainder of the Union other than the three mentioned above, and then the remainder of the county?—Quite so.

498. You have given the attack rate as per 1,000?—Yes, per 1,000 of the population.

B 499. Then you have given my Lord the date of the 1892 and 1893 outbreaks. In 1894 and 1895 have you given us the months?—There were no outbreaks. They are a continual dropping of cases. That is the peculiarity of the Orsett district. We do not have outbreaks, but with the small-pox ships we constantly are having droppings throughout the whole period.

C 500. What is the normal state of things with an outbreak in another part of the country where you do not find this cause at work?—In a rural district probably an outbreak may affect one to seven cases, and they are promptly removed to some hospital. The houses are disinfected, and possibly in a fortnight or three weeks D (one or two other cases may occur) the thing is put an end to. In a town it is a little more difficult to eradicate, but all throughout Essex throughout this period of 1901 we have never had any outbreak to compare in any way with the way it occurred at Orsett. Whenever it has occurred, in two or three weeks it has been stamped out.

E 501. Then the cases of disease did continue in 1894 and 1895?—Yes, and in 1896 even, dropping a few cases.

502. Looking at this Table A, from 1892 to 1895 in Purfleet the attack rate is 31 per 1,000 of the population?—That was it for the period of 1895.

F 503. In the county itself it was 1·1?—In the county itself it was 1·1.

504. That seems an enormous proportion?—Thirty times. Of course in taking the county we took such towns as East Ham, Leyton, and Barking, which are just on the outskirts of London.

G 505. I was going to ask you to mention that. Your county of Essex includes a great deal of the East-end of London?—It is practically continuous with the East-end of London.

506. Occupied by workpeople?—Yes, nearly all artisans and dock labourers.

H 507. Have you any slum districts?—Perhaps not to the extent you have in the East-end of London, but in some parts of the county there are some few old houses.

508. But East Ham and West Ham are very densely populated, are they not?—Very densely populated.

509. All that is counted in the remainder of the county?—No; West Ham is a parliamentary county borough.

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510. That was my slip, then?—I am talking of the administrative county with which I have to deal. The county boundary of West Ham is not included there, unless it is otherwise stated.

511. Mr. ASQUITH : You have not the figures for West Ham, have you?—I have some figures for West Ham later on. A

512. Mr. UPJOHN : That is the remainder of the county which is under your jurisdiction?—Yes.

513. And comparing Purfleet with West Thurrock, during this period Purfleet is substantially more than double?—Yes, substantially more than double the remainder of West Thurrock. B

514. And 10 times more than Grays?—Ten times more than Grays. That is to say, the further we get away from Purfleet the less infection we have to deal with.

515. Did you make enquiries to ascertain whether there was much communication between the Essex or north side of the river and the small-pox ships?—I was exceedingly anxious to ascertain whether that could be a possible explanation or not, and I have not the slightest doubt there was very little indeed. There were some ships anchored there, and the master, Commander Bland, who was in command, said there could not be any communication take place surreptitiously without his being aware of any, and he was not aware of any. The people at Purfleet were so anxious about it, that I think if they had known of anyone coming across there, they would have torn them limb from limb. C
D

516. At all events, from the very best means you adopted, you could not find out any mode of communication?—No, I could not. E

517. In 1901 there was an outbreak of small-pox in London?—That is so.

518. And I suppose you got uneasy. Have you the instructions issued by the Metropolitan Asylums Board on that occasion?—I think the only instructions are those communicated in Dr. Buchanan's report. There are no printed instructions. F

519. I understood they issued some special printed instructions?—I do not know that they did.

520. Then that was my mistake. Can you tell my Lord in this year, 1901, what was the first case of small-pox that happened in the Orsett Union?—The case of a man who worked at the signal box on the railway at the very nearest point to the hospital ships; in fact, nearer to the hospital ships than anyone in the district. He was working there, and contracted small-pox. G
H

521. That was the first one, August, 1901?—Yes.

Mr. UPJOHN : If your Lordship will have the goodness now

to turn to Table B, we have got them all classified under the month. February 10, 1904

522. Have you compared this Table B with the other?—Yes. Dr. J. C. Thresh.

A 523. It is on two sheets, and there, I think, you set out the urban districts?—Yes, the towns, the rural districts and the unions.

B 524. Is that a correct list of all the cases that were notified to you in Essex?—From the commencement of the epidemic I issued sheets to the medical officers throughout the county, and every week a complete return of the names and addresses and so forth was sent to me, and wherever I thought it of sufficient importance I went myself to investigate it, and I made suggestions as to what might prevent further outbreaks. You will find further, it is returned in the rural districts in August and September—there were eight cases in the Orsett district. That is the second table, B 2.

C 525. Before you go to that look at the first sheet of Table B. You mentioned one in August, Grays. Is that what one sees in August, 1901, against Grays?—Yes, that was the end of August. A man lived at Grays who had worked at the signal box at Purfleet. Then by looking at that table you might see also in September there were two cases at Grays. Those two were infected by that man early in September. They were removed to the hospital and no other cases occurred in Grays until well into November. It was stamped out; but, on the other hand, in the rural district in Orsett there were eight cases occurred in September; nine cases occurred in October; 32 cases occurred in November, and there had not been a single case in any other part of rural Essex; so that we had it raging for three months there before it occurred in any other district in the rural part of the county.

F 526. The populations you have given in the second column are, I suppose, correct in each case?—Yes, I think those are Census returns.

527. I think you were frequently in the Orsett Union, but generally at Purfleet during this outbreak?—Yes, in connection with the hospital, or with cases occurring.

G 528. I think your book shows what was happening at the ships during this time?—It does. It shows the influx of cases—the admissions to the hospital ships.

H 529. This stops in December, 1901. Where shall we get the returns for 1902?—I could not get them. Probably they are not issued yet. You may be able to get them from the Asylums Board.

Mr. UPJOHN : My Lord, we have got from the Board a statement initialed by a clerk in the Statistical Department, giving the figures down to the end of October, 1902.

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Mr. ASQUITH : Will you supply us with a copy ?

Dr. J. C. Thresh.

Mr. UPJOHN : Yes, certainly.

Mr. Justice FARWELL : It is some time or other in October, 1902 ?

The Witness : Yes.

A

Mr. Justice FARWELL : That will be enough, I think, for our purpose.

Mr. UPJOHN : My friend waives any technical question of proof, so perhaps I may put that in, but your Lordship will allow me to retain it in order that copies may be made.

B

Mr. ASQUITH : But you must let us have a copy of it.

Mr. UPJOHN : You shall have a copy of it as it stands.

Mr. ASQUITH : There is rather a confusion here.

Mr. UPJOHN : They overlap a little. This begins in August, 1901, and Dr. Thresh's table brings it down to December, 1901, so that they overlap by about five months. They are continued to October, 1902—just the end of the year.

C

530. It gives the date every week, so that we can compare those for ourselves ?—Yes, that is so.

Mr. Justice FARWELL : I have got a statement from September down to 1901.

D

Mr. ASQUITH : Yes, your Lordship has that on the second sheet of the Appendix.

531. Mr. UPJOHN : Then the figures did run up pretty rapidly in the last four months of 1901 on the sheets ?—Quite so ; they ran up, and immediately after they ran up the outbreak ends in the Orsett district. You will see the outbreak ends in September—the running-up and the number the ships admitted. There had been an average of only about one case on the ships until the 27th week. It remained less than 12 until the 33rd week, then it ran up steadily to 151, 187, and so on.

E

F

532. And then the outbreak maintained itself to the end of the year ?—Yes, and then the outbreak was over.

533. You were frequently consulting Dr. Ray Corbett ?—Yes.

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534. Was the doctor of the Local Government Board, Dr. Buchanan, there?—Yes, he was there frequently.

A 435. Was everything done that human skill and ingenuity could devise to cope with this outbreak?—In the Orsett district I have no hesitation in saying that more skill and care were devoted to this part than to any other division in the county.

B 536. Mr. ASQUITH : I notice that on the last day of 1901 it says there were 161 cases in the Orsett district. Does that include any of the rural population?—It might include Grays. Orsett Union would include that.

537. When you say that is rural, you mean district, do you not?—Yes, with this peculiarity, that it also includes Grays.

C 538. Mr. UPJOHN : Of course, in your Table B you distinguish Grays as an urban district from Orsett as the rural district?—Yes, if I mentioned Orsett in the rural district I should say Orsett rural district.

D 539. In other parts of the county, including Grays, did you find that your steps were effective?—I think the steps we took in the county were most effectual in almost every case. If you will refer to Table B, you will see what a small number of cases occurred even in places like Barking where the population is exceedingly poor, and where there are a number of very very small cottages.

E 540. After all you kept it down there?—You see the cases here that were introduced from London continually to all the towns immediately around the East-end, and yet when it was introduced in November, only a few cases occurred, and in December only a few cases occurred, but when the outbreak had got to its height in London, the cases you got from Barking, East Ham, and Walthamstow were very numerous. It was being introduced every day according to the statistics.

F 541. You knew what was at work then introducing the fresh cases?—Quite so.

G 542. Did you in consequence of all that come to a conclusion as to what was at work in the Orsett District?—I saw that care was taken there, because we had known ever since the small-pox ships were on the Thames that when cases appeared there in numbers outbreaks followed, and the district fully believed if there was an outbreak in London it would be coming there, and they were preparing for it, and what did follow was exactly what we might have expected, that when the cases on the ships got to 130 and 150, the disease broke out at Purfleet, and it remained there all the time they were on the ships, and spread to West Thurrock and Grays, and to a less extent to the parishes round about.

? only when cases reached 130 to 150

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543. I should like to ask you for the Purfleet figures, which do not appear in Table B. Can you give me those?—Do they not appear in Table A?

544. Yes; quite right?—In 1901 and 1902.

545. Yes, that is so. It is in the statement or table at the foot. A
 You have given there the figures for the first two years—1901 and 1902?—There are 57 cases in Purfleet—119 per 1,000, that is one-ninth of the population; 82 in West Thurrock proper, which corresponds to 30 per 1,000 of the population; 212 in Grays, corresponding to 15 per 1,000 of the population; 79 in the remainder of B
 the Orsett Union, which corresponds to 47 per 1,000 of the population. In the whole of the remainder of the administrative county there were 904 cases, which gives 1·1 per 1,000 of the population; so that there were 100 times as many cases in Purfleet in proportion to the population as there were in the county generally, taking towns and C
 rural districts together.

546. Now I think there is another table at the foot of Table A, which enables us to compare Purfleet with the higher rate in London, and also with Bethnal Green and Stepney?—In London, according to the County Medical Officer's Reports, the rate for the same period was 2 per cent. only. In the lowest district it was 40 per 1,000; in the highest, Holborn, it was 70 per 1,000; in the East-end, Bethnal Green and Stepney, again in connection with my county, it was 4 and 4·8. So that in little Purfleet we had 20 times as many cases in proportion to the population as they had in Bethnal Green. E

547. Which ought to be the easiest districts to deal with?—Oh, the rural districts infinitely.

548. Have you, with all the experience gained in this case, come to a conclusion (you have really answered this, but I want to get it definitely from you) as to what was the effect of that in Orsett Union and particularly in Grays?—The effect was arrived at by a process of elimination, and by reasoning from statistics which I deduced from every successive epidemic, and it was thought nothing would account for the continuous prevalence there, but the presence of the small-pox ships on the other side of the river. G

549. You have prepared a table called Table C. That is at page 4 of this same bundle. That shows the deaths from small-pox in the administrative county of Essex?—Yes, and why in this case I have taken deaths instead of patients is the fact that the notification of diseases under the Infectious Diseases Act did not come into force until quite recently, 1901, so that prior to that one could not get the number of cases, but by taking the deaths these could be obtained from the Registrar General's returns. H

550. That you have done here?—That I have done here.

551. And this table shows what it purports to show?—That February 10, 1904 is so.

552. And the figures at the foot are the deaths from small-pox in London during the first period and the second period?—Quite so. Dr. J. C. Thresh.

A 553. And that is correct, is it?—Yes.

Mr. ASQUITH: I see the percentage per thousand; what is the 100?

Mr. UPJOHN: Per 100 is the total number of deaths, because we know what the population is in Orsett Union, and you can make your own percentages then from that.

554. My friend complains you have not made the percentages for him with regard to Orsett Union and the remainder of the county, but you have given us the figures in Table B?—Yes, that is so.

555. I think your percentages are useful for this purpose?—They show that prior to the ships being placed in the Thames, the deaths in the Orsett Union were little above those in the others generally, and if you compare them you will find though even a little above the average there were other districts with a higher rate. There was nothing excessive there.

D 556. Just to conclude this part of the case, I think you prepared a chart, and I think his Lordship has a separate bundle of charts. This is to enable you to see the relations at a glance. Chart A covers the period commencing the year 1884 coming down to June, 1902?—Yes, that is so.

E 557. Your diagram shows the death-rate of small-pox?—Yes.

558. In Orsett Union and also on the ships?—Yes. The aggregate number of cases on the ships.

559. And the red line shows what has happened on the ships?—That is so.

F 560. Apparently the red line seems to be just below the black? Yes, except the last outbreak.

561. The red line goes right ahead?—Yes.

562. The outside black line there is no part of the chart?—You see, I have not the figures. It is the proportion of cases in 1902, but they are not put there.

Mr. ASQUITH: You will let us have copies of these?

Mr. UPJOHN: My friend is rather hard, I think. At my request a special copy of all these things was made for your Lordship in order that you might follow it, and now my friend wants one.

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Mr. Justice FARWELL: I suppose on the usual terms, Mr. Asquith, you can have copies. Counsel are always willing to lend each other papers.

Mr. UPJOHN: If it is a question of lending them to my friend or Mr. Parker, either my junior or myself would do that overnight. A

Chart 13/
563. Dr. Buchanan shows the cases in the different sanitary districts during the years 1901-2?—Yes, that is so. The black line is in proportion to the number of cases occurring in the district; but I must draw attention to the fact that there are about 14 districts here in which there is no case at all, therefore they could not be B shown.

564. The statements there are correct and the black lines are correct?—Yes, they are.

Mr. Justice FARWELL: Romford is a long way off.

The WITNESS; That I shall have to explain. C

Mr. UPJOHN: That belongs to a different hospital.

Mr. Justice FARWELL: You are producing this as part of the evidence to show why a hospital is dangerous.

relevant
Mr. UPJOHN: What they said was: We have to satisfy your Lordship that it is to be reasonably accurate and reasonably arranged, D and that is all you need find. Then your Lordship will have that in evidence, and it will be for you to draw the conclusion.

Mr. Justice FARWELL; I rather shrink from expressing any opinion as to what caused the outbreak. I think I shall refer that to the experts. E

Mr. UPJOHN: It is only for me to say it is not only post hoc, but propter hoc.

(Adjourned to to-morrow morning at 10.30.)

In the High Court of Justice.
CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,
Wednesday, February 10th, 1904.

BEFORE
MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

V.

THE MAYOR, ALDERMEN AND
CITIZENS OF THE CITY OF
NOTTINGHAM.

MINUTES OF EVIDENCE.

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In the High Court of Justice.

CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,

Thursday, 11th February, 1904.

BEFORE

MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

v.

THE MAYOR, ALDERMEN & CITIZENS
OF THE CITY OF NOTTINGHAM.

[*Transcript from the Shorthand Notes of BARNETT & BARRETT, 40, Chancery Lane, W.C., and H. H. TOLCHER & Co., 93 and 94, Chancery Lane, W.C.*]

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EVIDENCE—Second Day.

Dr. J. C. Thresh.

DR. JOHN CLOUGH THRESH'S

Examination continued by Mr. UPJOHN.

565. Have you got chart B before you?—Yes.

566. Looking at chart B you will see Orsett there attains the **A** worst position. Does that include Grays?—No; in this case not, it is given separately.

567. It is Orsett Rural District excluding Grays?—No, the Orsett Union excluding Grays.

568. Then Grays is shown separately?—That is so. **B**

569. I think you have also prepared a chart which we have marked C. Chart C is based upon monthly notifications?—Weekly notifications.

570. You have grouped them by the month?—Yes.

Mr. UPJOHN: Here there is a question as to calling a gentleman, and I daresay my friend, Mr. Macmorran, will see his way to help us in getting the gentleman up. **C**

571. These notifications, I think, are not given to you but to the Medical Officer of Health of the particular district?—That is so.

572. That would be Dr. Ray Corbett?—In the rural district, **D** yes.

573. Then periodically Dr. Ray Corbett sends copies on to you?—During the small-pox period he sent copies of each notification on to me with his remarks.

574. Was that weekly or fortnightly?—That was done weekly. **E**

575. Have you got the original documents sent to you by Mr. Corbett?—Yes.

576. You have those in Court?—Yes.

Mr. MACMORRAN: I raise no question about those. These are official documents, and I have no doubt they are quite right. **F**

Mr. UPJOHN: I am obliged to my friend. I mentioned

yesterday I had to call Dr. Ray Corbett, but that was really to produce these documents. Now, I think we may release him.

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Mr. MACMORRAN : As far as I am concerned I will admit them.

A 577. Mr. UPJOHN : You have taken these notifications and grouped them according to the month ?—Yes.

578. I think at the foot of this chart you have given the explanation of the lines—the different colours ?—That is so.

B 579. So far as East Ham and West Ham are concerned, those I think are for another purpose ?—Yes.

580. But this shows the difference between the notifications in Orsett which is a rural union, is it not ?—Entirely so.

581. And the other rural districts which are shown by the firm red line at foot ?—That is so ; yes.

C 582. And the broken black line which shows the next highest to Orsett is West Ham ?—That is so.

583. Which is practically London, I think ?—Yes, quite so.

584. The dotted black line shows the urban districts, excluding what is East Ham and West Ham ?—Yes.

D 585. And that is correct, according to the notifications, is it ?—Yes ; from West Ham a medical officer made a report to me every month of the number of cases.

586. That is also an official return ?—Yes. Of course in these cases he did not give me the names and addresses, but simply the number of cases in the district.

E 587. I just want to put one or two things to you that will assist my Lord to understand Chart C. It shows, as far as regards the Orsett union as to dates, that it commences earlier and lasted later than any other part of the county ?—Yes, it commenced two or three months earlier, and lasted 12 months longer.

588. When did it get to a maximum there as regards the rest of the county ?—The maximum there was in June, whereas with the rest of the county it was not until April.

G 589. And consistently during the whole period from day to day the attack rate was higher ?—Higher than many of the urban districts ; higher than East Ham, or even West Ham.

590. Those are the two most densely populated districts of the county ?—Yes, the poorest class of population.

H 591. I think you also prepared a chart, D, which I think is based also upon notifications, is it not ?—Yes, that is so.

592. And it starts in the year 1891. I think that is the first year until the law of notification came into existence ?—Yes.

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593. And it goes down to the year 1902?—Yes.

594. The month of June, 1902?—Yes.

595. There, the black line shows the number of cases in Orsett Union, and the red line shows Essex administrative county, excluding Orsett?—Yes, per thousand population. It gives all small-pox cases per thousand per parish. A

596. It is the number of attacks per thousand?—Yes.

597. That also is prepared by you and is correct, is it not?—Yes, that is correct.

598. Then those are the Charts A, B, C and D referring to the Orsett case?—Yes. B

599. The Tables A, B and C?—Yes.

Mr. UPJOHN : My learned friend reminds me that there is a little slip which has got amongst our copies, I do not know whether it is amongst your Lordship's copies. It is between Chart C and Chart D. It is really only a memorandum that the witness made. Your Lordship sees : "Small-pox rate per thousand." Perhaps the best plan would be to take that out. It is only part of the materials. (To the Witness) : You have looked at it? C

The WITNESS : Yes. D

Mr. UPJOHN : Perhaps you will treat it in the same way, Mr. Macmorran?

600. I think you did tell my Lord yesterday, that by personal inquiry on the spot you did your best to trace the cause of attack in those cases that happened in the Orsett Union, and to find out what was common to other parts of the county, and what there was that was special?—Yes, where I had cases in 20 districts I had to visit them where I thought it was most important; and Orsett being, as I thought, the most important, I gave it special attention. E

601. And you were attended by Dr. Buchanan, the doctor of the Local Government Board?—Dr. Buchanan made a special investigation after the receipt of the preliminary report by myself. He thought the matter was important. F

602. I think Dr. Buchanan has made a special report upon it?—Yes, Dr. Buchanan went specially into it and made a report. G

Mr. UPJOHN : Has your Lordship got the document headed : "Dr. G. S. Buchanan's report to the Local Government Board"?

Mr. Justice FARWELL : Yes, it is the 27th September, 1902.

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603. Mr. UPJOHN : Yes, my Lord, that is it. There is a convenient summary at page 13. Of course, you are familiar with this ?—Quite so.

A 604. And so far as it states the facts, I think you agree with the facts ?—Quite so.

B 605. It says at page 3 : “ When considered along with previous experience of the ability of the small-pox hospitals to disseminate infection in their neighbourhood, and with the history of small-pox in the Orsett Union since 1884, the facts of this epidemic give strong ground for inference that small-pox prevalent in Purfleet was set going, and from time to time throughout the epidemic was reinforced by infection aerially conveyed from the Metropolitan Asylums Board Small-pox Hospital Ships just over half a mile away across the water.” Do you agree with that statement ?—Yes. I expressed that opinion some time ago to Dr. Buchanan. It really was that opinion that set C Dr. Buchanan out to investigate.

606. You expressed the opinion, and he was sent down as an independent gentleman ?—Yes, to make a thorough investigation.

D 607. And this is his report to the Local Government Board ?—Yes.

608. I see in 5 and 6 he excludes certain possible causes ; however, you agreed with these facts ?—Yes, I am in agreement with Dr. Buchanan.

E 609. Then, so far, I think those are the facts that you refer to with reference to the Orsett case ?—Yes.

F 610. I think you prepared a chart which shows it in a somewhat different manner. You have supplied what we had not got quite yesterday, a sketch of the Orsett Union, and you have also included a union that I am going to ask you about directly, the Romford Union, and you have shown by red dots each case of small-pox, and after the name of each parish or place you have put a figure which represents the number of cases per thousand per parish ?—Yes, that is it.

G 611. And you have shown the site of the hospital ships ?— Yes, approximately the site of the hospital ships.

612. Just look at that and see if that is correct (handing document) ?—Yes, this is prepared by myself and is correct.

Mr. Justice FARWELL : I have not seen that.

Mr. UPJOHN : No, your Lordship has not seen it yet.

H 613. Before you deal with it, I want to distinguish a little more between the Romford and the Orsett Unions. Is that where there is a black line ?—Yes.

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614. Will you put a pencil across at the beginning and end of black line, just to assist my Lord?—I have carried the pencil line through to this spot. All to the east of the pencil line is the Orsett district.

615. There is one other case within your county that I want to ask you about, and I think we can take it shortly. Looking at your Chart B, my Lord referred yesterday to the Romford Rural Union, which is the third worst case?—Yes, the Romford Rural District. **A**

616. That, next to the Orsett district, including Grays, in these outbreaks has been the worst outbreak in your county?—Yes, much worse than any others. **B**

617. Have you personally considered the causes of infection operating within the rural union?—Yes, it is the district in the county in which there is a permanent isolation hospital. It is the small-pox hospital belonging to West Ham, and all the cases from West Ham on the south part of Essex are taken to that hospital. It is situated in the parish of Dagenham. **C**

618. West Ham has a population of just over a quarter of a million inhabitants?—Yes, 270,000.

619. What is the accommodation of this hospital?—They were wise in making preparation beforehand, and they have purchased an estate of about 120 acres, that is, nearly a quarter of a mile square, and in the centre of that they have placed their hospital, so practically there is only one house every quarter of a mile, and not many houses beyond that until you get to the half mile. **D**

620. There is the village of Dagenham which is about the half mile?—Yes. **E**

621. The second sheet of Table B shows the notifications in respect of the Union?—It shows the notifications in the rural district of Essex. **F**

622. Of course the first sheet shows the urban districts?—Yes.

623. It is the rural district we are concerned with, is it not?—Yes.

624. And the notifications there in the rural district and Orsett?—Yes, there are a great many workmen going near to the hospital, and I think a good many workmen go down to the docks, and several of them were infected with small-pox. **G**

Mr. Justice FARWELL: Just explain that map to me.

(The Witness went on the Bench.)

H

Mr. Justice FARWELL : I have been trying to learn the localities. The witness has told me where the hospital is. Have you anything to show you that, Mr. Asquith ?

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Mr. ASQUITH : No, nothing whatever.

A The WITNESS : I can put it on the document if you like.

Mr. Justice FARWELL : If you look at the left-hand corner you will see the Dagenham village. That is where the cross is. Looking at the map at page 2 of this print you will see the river there. The witness has also told me going down the road the work-

B men have somehow or other developed small-pox.

Mr. ASQUITH : I am much obliged to you, my Lord.

Mr. Justice FARWELL : I do not think it is quite fair for me to get private information from the document and the witness if the learned counsel do not have it as well.

C Mr. ASQUITH : I am much obliged to your Lordship.

Mr. UPJOHN : I was asking my friend as to any stricter proof than that to which I am now coming to, the admissions to Dagenham Hospital and the number of persons there from time to time. We have got from Dr. Charles Sanders, who is the Medical Officer of Health for West Ham, an extract from the hospital books, I presume, containing a weekly return of the admissions to the hospital between October, 1901, and October, 1903, and the principal return of cases remaining in the hospital during that period of two years. We had the gentleman here with the books yesterday. My friend agrees this is a convenient way of putting it in without troubling further with the books. I am only putting it in for the purpose of the evidence I am going to give that this hospital operated there as a centre for the dissemination of disease. There is now Table D. I have gone as far as A, B, and C. If Dr. Thresh is going to refer to it, it might be called Exhibit D, and it will then follow on.

D

E

F

Mr. Justice FARWELL : I understand this is not admitted as a correct statement of the evidence, but it is a correct extract.

Mr. UPJOHN : It is a correct extract from the hospital books

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Mr. ASQUITH: So far as it shows the actual number of persons admitted into the hospital, I do not object to it.

Mr. Justice FARWELL: I could not possibly get on with all these documents if you did not help me. A

625. Mr. UPJOHN: You have told my Lord about the extent of the hospital property, that there is no house within a quarter of a mile, and the nearest village is Dagenham, which is just about half a mile?—Yes. B

626. Now, I think this table D shows that in 1901 admissions began to take place in the hospital. On the 24th October there were 17 cases in. At the end of November there were 36 under treatment, and by the beginning of January, 1902, that was rather more than a month, there were 50 cases under treatment?—Yes. C

627. What was your experience as to cases happening in the neighbourhood?—I was largely interested in this hospital because I was afraid that like the small-pox districts it would have the same effect on the surrounding population, and inasmuch as certain districts had got power to send cases there. I visited the hospital on a good many occasions, and I also enquired, or caused enquiries to be made, amongst the cases which occurred within the radius of about a mile of the hospital, and the medical officer notified every week the number of cases, their names and addresses. D

628. Is that Dr. Ray Corbett?—No, that is Dr. Wright, and upon those I constructed the Chart E. E

629. Is Dr. Wright in attendance here, or perhaps my friend Mr. Asquith will make this admission to enable me to stop Dr. Wright from coming. Dr. Wright has sent you copies of the notifications for this district, has he?—He has sent me a copy of every notification he was dealing with. F

630. And you have them all here?—I do not know whether I have them all here, but I have them all.

631. And you worked upon them all to prepare this document E?—Yes. G

Mr. UPJOHN: Then, Mr. Asquith, may I stop Dr. Wright coming?

Mr. ASQUITH: Yes.

631A. Mr. UPJOHN : Before we come to the charts, cases did occur in the district round the hospital ?—Yes. February 11, 1904

A 632. It is Table E that we ought to look at before the chart. I handed up a number of tables yesterday, and this is the last sheet of the Table E. Does this show the notifications given? Of course "M.O.H." is the Medical Officer of Health?—Yes. Dr. J. C. Thresh.

633. Does this show from the notifications given the number of cases that happened in the district in 1901-2 in the parish composing the Romford rural district?—That is so.

B 634. Can you give me the dates here, and the months?—Those are contained in Chart B, 5 cases in December, 13 in January, 4 in February.

635. I have not got that?—Yes, Table B 2.

C 636. Yes, the second Table B; that gives the details; I remember that now. It is the last but four, but I have already referred to that. There were 107 altogether?—Yes, I think so.

637. Now Table E accounts for 104 of those?—Yes.

638. 104 out of the 107?—That is so.

639. In Dagenham there were 44 cases?—Yes.

D 640. That is 40 per cent of the whole outbreak for the Romford rural district?—Quite so.

641. I think there were 9 parishes?—Yes, in the rural district.

642. And their names are given on Table E?—Yes.

E 643. And the population is given opposite to each parish?—Yes, that is so.

644. In Dagenham there were 44 cases, that is 40 per cent.?—Yes.

F 645. Now Hornchurch, and his Lordship has a little advantage of us here. That is shown by the sketch before your Lordship?—It is just by the small-pox hospital—the green there. The village lies north, right down by the boundary of the river.

G 646. Does it lay between Dagenham and the river?—No, it is a long narrow parish between the black and the green. It is in Dr. Buchanan's map. You will see it marked "Hornchurch Village," and it extends right the way down the river.

647. In that parish there were 42 cases out of 107?—Yes.

648. That again is roughly 40 per cent.?—Yes.

649. Rainham is further to the east, is it not?—Yes, it lies between.

H 650. Rainham is between the small-pox hospital on the west and the small-pox ships on the east?—Yes.

651. So that is rather a happy position. There 14 cases happened?—Yes.

I 652. And Wemington and Upminster account for three and one respectively?—Yes.

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653. That accounts for 104 out of the total of 107?—Yes.
654. Then in that Table E, in the last column, you have given the rate per 1,000?—That is so.
655. In Rainham and Wemington it was over 8 per 1,000?—
Yes. A
656. Dagenham and Hornchurch $6\frac{1}{2}$?—Yes.
657. Now the Romford union district, where is that?—That is a little further north; almost directly north to the hospital; but it is not on this map.
658. It is not shown on Dr. Buchanan's map?—No. B
659. That is to the north, away from the direction of the hospital ships?—Yes.
660. There you have got a large population comparatively, 13,000 people, and the rate per thousand was $3\frac{1}{2}$; 3·7?—Yes. It was very much more in direct communication with London than the rural population, and yet that large district was only $3\frac{1}{2}$. C
661. There is a good deal of communication between Romford urban district and London?—Oh yes, very large indeed. There is a good train service.
662. At this time on the east side of London the small-pox outbreak was going on?—Yes. D
663. At the foot of Table E you have given the details of 46 cases which occurred opposite the districts you have mentioned?—Yes. I have simply made a note of those.
664. Are those within your own knowledge?—Yes. In making our investigations we came to the conclusion that the people had been affected in that way. E
665. Some that were working in Purfleet and West Thurrock, and some in Grays, were at Dagenham Hospital, and you have got 16 working against the site of the Metropolitan Asylum Hospital. Which hospital is that?—At Joyce Green, in Kent, near the ships. Many men went down there for the temporary work. F
666. How did they cross the river?—I fancy they came up to London. They had to go down the other side of the river.
667. Or perhaps they would go through the Thames Tunnel?—
Yes, perhaps they would. G
668. I shall have something to say about the Thames Tunnel presently. These cases were investigated by you?—Yes, or my assistant.
669. Take the last—the Thames bargemen. Did you investigate those cases yourself?—Two out of three. H
670. Did you come to a conclusion (as the result of your investigations) as to how they got infection?—Yes, by passing the small-pox ships, I think.

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671. That was the best opinion you could form?—Yes. One of these men was in a district with which I am very well acquainted, and he, with a number of others, took a load of hay—I think it was —up to London, and this man never went off the barge. The other
A men had been off, and on their return to a place called Aveley a few days after this man was attacked with small-pox. He had never been off the barge. They had gone up the river and passed the ships and came down again and passed the ships.

672. That is the conclusion you came to?—I could find no other
B cause of infection.

673. I think you said that there were certain cases of infection when persons were passing along the highway outside Dagenham Hospital?—In making our investigations in the cases occurring at Dagenham and Hornchurch, some notes were made at the time, and
C in a good many of them so far as we could see the nearest they had been to any place of small-pox was in passing down a footpath to get down to Dagenham Docks. There was a footpath passed along by the side of the river, and some would be a quarter of a mile, and some of them half a mile, within the radius of the hospital; but the
D footpath is a little more than a quarter of a mile from the hospital.

674. This Chart E shows the Romford notification of small-pox in West Ham?—Yes.

675. Are there other places where (compared with West Ham) they are nearly double?—Two to one. This shows the monthly
E notification of West Ham and the Romford rural district.

676. Per thousand population?—Yes.

677. The red line is the rural district and the black is West Ham?—Yes.

678. We have got the West Ham officer coming. You have no
F personal knowledge of what happened in his district?—No, not beyond receiving the notification—the number of cases notified.

679. Apparently, however, Romford not only did suffer more, but suffered much about the same time?—It began about six weeks
later.

680. And it ended about the same time?—Yes.

681. And there one can see on the face of the chart a certain
relation between the two?—Yes.

682. As West Ham got bad Romford got very bad?—Yes, and
H I think that although the black line terminates at 12 and suddenly stops you have got to remember the cases sent in during April would be in the hospital during May; it continues in the rural district, you will see, during May.

683. I think you mentioned to my Lord just now, you paid a
good many visits to this hospital?—I did.

I 684. Was it well administered?—Very well in the first instance;

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but of course, like all hospitals connected with small-pox, it broke down at the height of the epidemic.

685. When great pressure comes?—Although they had about the same population as Nottingham, yet they made arrangements for 60 permanent beds; but in April they had about 300 cases in the one month. The consequence was, when they saw what a serious outbreak was on hand, they had to set to and put up tents and wooden hospitals, which covered a very large extent of the ground. A

686. That is what I was going to ask you when the epidemic was at its height, what sort of area did they cover with their buildings?—I should think ten or twelve acres altogether. B

687. With buildings?—Yes, with buildings—a very considerable area.

688. I must ask you this question again. Did you as the result of your knowledge and investigations come to a conclusion as to what caused this outbreak in the Dagenham, Hornchurch, and Rainham parishes as compared with the other parishes in that neighbourhood?—I could not find any difference between those parishes and other parishes throughout Essex about the same distance from London, except that several had in the midst of them the small-pox hospital belonging to West Ham; and I came to the conclusion that even there, although we had the quarter mile radius, we had not secured absolute safety considering the number of cases the infection carried from the hospital. C D

688A. Then as the result of your study of the matter, may we take it you agreed with the conclusion of Dr. Power and Dr. Buchanan that I read yesterday from their reports?—I have taken it in conjunction with their experience, and this recent experience proves it, and in my opinion makes the theory absolutely certain. E

688B. The danger increases, I gather, with the accumulation of cases?—Yes, with the accumulation of cases, and the number of people living or working in the vicinity of the hospital. F

688c. Have you come across cases where your investigation showed that the infection was probably on the railway?—It is very difficult to tell as to nearly every person that travelled on the railway—it is almost impossible to say. G

Mr. UPJOHN : Then I will not press you as to that. My Lord, these are the two cases that we ask your Lordship to consider on Dr. Thresh's evidence.

688D. Now I am going to leave those cases and to ask Dr. Thresh about the hospital at Nottingham. I think you have paid a visit to Nottingham?—Yes, I was there on December 1st, I think. H

688E. Did you go over the hospital?—No, I did not go over the

hospital, I walked all the way round ; but there was no necessity to go over it because from the highway or from the embankment you can see everything almost inside of it.

688F. Was permission asked that you should go inside ?—No,
A I did not want to go inside. You can see every portion of it from the outside.

688G. Did you also visit some places in the neighbourhood ?—Yes, I went to all the places in the neighbourhood.

688H. I am not going to ask you much about this. Did you go
B down to Burnwell and up to Bestwood to satisfy yourself as to the character of the neighbourhood ?—Yes, I did.

Mr. UPJOHN : Before I go into this further, perhaps I ought to mention this now. The tables and the chart might be marked. I submit, subject to cross-examination, my Lord, they are proved,
C and, of course, the table of admissions that we agreed to has not been formally marked before.

688I. Now I ask you as to what you saw there. I want you to assist my Lord by stating what are your views as to the situation and position of the hospital, and the extent of ground that would be
D taken for it, and so forth. First of all as to its situation. Is it in or near to a populous district ? What do you say to that ?—It should be got as far away as convenient. There is no reason why a hospital should not be six, seven or eight miles from the centre of a large town—that is in connection with a small-pox hospital.

688J. Then as to this being near a traffic route, what do you say
E about that ?—It certainly should be as far away as convenient, from the highways especially. It should be placed in the centre of an estate of some considerable area. Of course the size of the area will depend on the town it is going to serve. A small ordinary hospital
F would not require the amount of isolation that a large hospital would, but where you are likely to have 200 or 300 cases, I think at the very least you should have an area to correspond with the West Ham Hospital.

688K. Now I want you to tell my Lord your views as to the site
G and area and so forth of the hospital premises at Nottingham. First of all, as to the size of the land—the area ?—I stepped along the front, and it was about 1,000 feet long, and it is a narrow piece of land, so that any extensions which are made must be made practically parallel with the road. As to the buildings put up, they would be
H 50 feet from the high road. It seemed to me to be that roughly, and that they were putting in the hospital on the top of it.

688L. If a severe outbreak occurred, would it be necessary to put up other buildings or tents ?—No doubt it would be necessary to put

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them up. If you got a severe outbreak anything like the West Ham one, you could not possibly put it on this site. There is not room for them.

688M. Now listen to this question. You are suggesting an overcrowding difficulty with, of course, the risk of infection?— I believe so. I gave the aggregation of these cases together and that makes the infection much more. A

688N. Then your first criticism, as I understand it, is that such site is too small?—Yes.

688O. And the shape of it is bad?—Yes. B

688P. Now as to its proximity to a road. You have mentioned that it has a thousand feet frontage to and abuts on the road in front?—Yes.

688Q. You probably went through the district called Bulwell?—Yes. C

688R. That is to the south, between Nottingham and the hospital?—Yes, we drove through that.

688S. Is that a populous place?—Yes, there is a good deal of population there.

688T. Then you go to the ironworks and collieries, and of course the villages beyond?—Yes. D

689. I think Dr. McVail accompanied you?—Yes he did on that occasion.

690. Did there happen to be any particular traffic on the road when you were there?—Several carts and horses that would pass along apparently discharging men, and there was the traffic offetching coal from the colliery. That is what they seemed to be engaged in doing. Then there were a lot of colliers lounging about with dogs. E

691. What day of the week was it?—Tuesday, I think.

692. Taking this road in front, what have you to say about it?— I think it is in very dangerous proximity. F

693. It is 17 yards, that is 50 feet, away?—Yes, I had no difficulty in taking hold of the top of the woodwork and looking over it. When you do that you can see right through the hospital. They were moving a dead body from the mortuary, and I went up without the least trouble. G

694. Did you form any opinion as to whether this proximity of the highway would be a source of danger to any persons on the highway?—Yes, I think it would be.

695. Did you go along the road at the back that we heard of yesterday?—Yes, that is down by the pumping station and then on by the allotments. By the allotments of course there is no fence or anything. The allotments are a little lower. H

696. Take the case of the persons living in those cottages—what

do you say as to any risk being incurred by those people?—There is undoubtedly a risk to the inhabitants of those cottages. February 11, 1900

697. Then did you visit the properties somewhat to the north? Dr. J. C. Thresh.
Did you go down by the corn mill and the forge mills?—Yes.

A 698. If I understand you correctly, you went round there; and then did you come back by a road at the back of the hospital?—Yes, right at the back of the hospital.

699. That was a road that was mentioned that the corn miller ought to have come by?—Yes.

B 700. I do not know whether there was much traffic on it, but we did not hear much of that yesterday?—I do not know whether I saw any traffic on it. There were two horses and carts up at the mills, and I believe they came by that road.

C 701. Do you believe there is a danger in the proximity of that road?—Yes, oh yes. I consider it is a danger.

702. I did not know at all about this road until yesterday. Have you got an Ordnance map?—Yes.

D 703. Is it the road we see leading from the Forge Mills across the Bestwood Park down to the Midland Railway, and so on, coming down to the Midland cottages?—There is one road; and then another that comes down to the pumping station under the railway, under the Bestwood Park end. Then there is another road that comes past the cottages to the corn mill.

E 704. It is that road that seems to start from the corn mill and the forge mill, then comes across the railway, and then you leave the pumping station on your right, and it crosses right round by the fence of the hospital?—Yes, I went along by the fence of the hospital, and then on to the allotments.

F 705. It takes you down to the allotments?—Yes, of course, that gets nearer to the site.

706. I am afraid I am not quite right about this road?

Mr. ASQUITH: I do not know whether the witness is speaking from personal knowledge or from an inspection of the map.

G 707. Mr. UPJOHN: I am afraid I have misled you. From the corn mill and forge mill you go right across the railway?—I know we went to the forge mill and then came right down the track.

708. You see the road on the opposite side of the railway?—There are two roads here, and the one we came down was the road by the cottages.

H 709. You came down by Barrow's cottage?—Yes.

710. Never mind about the other. In your opinion is there any

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risk to any persons passing by the railway?—I think if you have a large number of acute cases there is quite a possibility of infection.

711. Mr. ASQUITH : To the persons in the trains?—Yes.

712. Mr. UPJOHN : And you have to consider the persons there?—The longer you are there the greater the facility. If there is a danger when trains pass rapidly it becomes more marked when the persons are staying there some time. A

713. We heard yesterday about the engine passing to and fro?—Yes, that would be dangerous to the persons who had charge of it. B

714. There is a little difference between my friend and myself as to where we are to take our centre from. Can you say whether the centre should be taken from the centre point of the site, or whether it should be taken from the boundary of the site?—I think it is an absurdity to lay down a hard and fast rule to serve a hospital which will have half-a-dozen cases and a hospital where there may be hundreds of cases. In one case with 199 it is safe, but with 201 it is unsafe. It must be interpreted in a common-sense manner in a case like this. Where you have a long narrow area I think it would be absurd to take the centre part as the source of infection. In the case of a great outbreak you will have the source of infection spread over the whole. C

715. Did you go on to the colliery and see the downcast shaft?—Yes. D

716. You know whereabouts that is?—Yes. E

717. You know for what purpose it is used—for pumping air into the workings?—Quite so.

718. It circulates air through the workings?—Yes.

719. In your opinion, is there any risk there?—It is not a desirable thing; I should say there is a certain amount of risk. I say that in the absence of experience. F

720. Their works at the bottom are about half a mile away. Perhaps I ought to put this more definitely. If there was accumulation of acute cases on the hospital site would there be a substantial risk to persons working in the colliery?—I think there must be a serious risk in that case. G

721. Now, take the case of those working at the ironworks and the corn mill and the forge mill. They are nearer still?—They are still nearer.

722. Would you say there would be a greater risk to them?—I think the risk would be equally great, and in some cases a little greater. H

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723. In the two mills. They are only one-eighth of a mile away?—Yes.

A 724. Then, speaking generally, with the persons using the highway, and the persons working within, say, half a mile of the hospital site, in your opinion is there a substantial risk, or a serious risk of their contracting the infection under certain circumstances which might exist as to the using of a hospital?—Yes, there is in my opinion.

B 725. If there is an outbreak, and the hospital were used for acute cases. Do you call it a suitable site or otherwise?—I do not see a single element of suitability in it.

Mr. UPJOHN : Then I think that is all I need ask you.

Cross-examined by Mr. ASQUITH.

C 726. Dr. Thresh, this is by no means the first time you have given evidence in cases of this kind, is it?—No.

727. Can you give me one or two of the cases in which you have given evidence, cases that have been litigated?—I think one only in recent years, in Dublin.

D 728. The Rathmine case?—Yes.

729. I think the Court did not accept your theory in that case, or act upon it?—The Vice-Chancellor did.

730. But the Court of Appeal did not?—I understand not. I have not seen the judgment.

E 731. Have you given any evidence in this country?—No, I attended once or twice, but have not been called.

732. What is your theory?—It is not any theory at all.

733. The theory that you are in the witness-box to support?

Mr. UPJOHN ; He is not in the witness-box to support any theory.

F The WITNESS : I am supporting facts. The theory is proved as accounting for the facts.

G Mr. ASQUITH : At what distance from the small-pox hospital—we will come to the question of numbers presently—is a person safe from the danger of aerial infection?—It depends altogether on the size of the hospital, and on a great many factors about which we know nothing, weather, wind and things of that kind.

735. First take the question of space, with a hospital like this

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one, not used for more than 40 patients, what do you say to that?—
I think there would be a certain amount of danger then, but from
what I saw I should think it would be fit for 10 patients only.

736. That is entirely a different question. I am asking you to
take this hospital as being used for 40 patients, and not more. A
At what distance from the hospital is a person safe?—I cannot
say. I think it is possible that from time to time you would have
odd cases.

737. Would there be any substantial risk of danger?—Yes, I
think there would be if so near the highway. B

738. To whom?—To persons passing to and from the highway,
the building being so near.

739. Although not more than 40 people?—Yes, I would not
use that site for more than 10 patients myself, and I would not
recommend it for a hospital of any kind, much less a small-pox C
hospital.

740. I will ask you to kindly pay attention to my questions.
You think even with 40 patients it would be still a source of danger?
—Yes.

741. Would the danger extend beyond the quarter-mile radius? D
—No, I think not, but the more cases you get the further the infection
goes.

742. Supposing only 40 persons in the hospital, would the
danger from those 40 persons extend beyond the quarter mile radius?
—I do not know. E

743. In your opinion?—In my opinion it would on occasions.

744. What do you mean by on occasions?—If the 40 cases were
acute cases, and if the weather and wind, and so forth, were favour-
able—there are so many considerations that I cannot give you a
definite answer. F

745. I quite agree. Now take a half mile; would it be dangerous
to people half a mile off with 40 people in the hospital?—I daresay
it would be dangerous; but, of course, the risk would be less.

746. Would there be any substantial risk at all?—Forty cases
and a small site. G

747. I do not see what smallness of the site has to do with it. I
am taking a man half a mile off. Would there be any substantial
risk of infection there?—I am inclined to think that half a mile off
working at that distance from the hospital with the wind blowing that
way, and with certain weather, there would be a distinct risk. H

748. Then the site of the hospital; does that make a difference?
—Yes, it makes a little difference, whether the hospital is protected
by an embankment or anything of that kind.

749. If the wind is favourable, and the man is working from the

hospital within a distance of half a mile, the man might be infected, February 11, 1904
you say?—Yes.

750. You are familiar with the regulations of the Local Government Board when they borrow money for small-pox hospitals? Dr. J. C. Thresh.

A —Yes.

751. Now let me call attention to this condition: "If the Board require, as regards hospitals for small-pox, the cost of which is defrayed out of borrowed money, these particular conditions should be complied with. In cases of small-pox"—leave that for a moment

B —"the site must not be within a quarter of a mile of them either a hospital or a population of as many as 200 persons." Now take this particular place, not more than 40 patients have been treated in it.

C Do you consider that a population of 200 persons within a quarter of a mile would be safe?—I think my previous remark would lead you to infer that the stipulations of the Local Government Board are simply absurd. There is no question there as to whether it is two patients or 400; it is simply absurd. X

D 752. And I suppose the second one is still more absurd: "The site must not be within half a mile of a population of as many as 600 persons, whether in one or more establishments or more than one establishment or any dwellings"?—That for a small hospital is all right, but when you get a hospital for a large town, it is absurd.

753. What do you mean by small hospital?—A hospital for 10,000 population with perhaps 10 or 20 patients.

E 754. What do you say about 40 beds?—If the site is properly selected even 40 beds. X

F 755. It cannot be a question of selection. If there were 40, do you think the regulation is a reasonable regulation?—200 people within a radius might be all round that ground where you are going to put the hospital. On the other hand, they may be spread all the way round.

756. In your view as an expert, are these regulations of the Local Government Board sufficient for public safety or not?—No, X they are not.

G 757. You disagree with them?—Yes, they answer the majority of cases, not the exceptional case.

H 758. Do they answer the cases where not more than 40 persons are under treatment in the hospital?—I should say the majority of persons up to 40, you might take it, but there are exceptional cases.

759. Up to 40 they might be safe?—Yes, probably; but you would never get absolute safety. X

760. You went over the ground, I understand, at Nottingham?—I went round it.

I 761. And amongst other places, I think your attention was

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called to Bestwood Colliery and the ironworks at Bestwood?—Yes, I went through them.

762. Just take it from me, for a moment, that this hospital was a hospital for the reception of patients on the 12th November last?—Yes. A

764. With an average of from 30 to 40 patients there?—Yes.

765. Would you or would not you have expected in your view that some cases of small-pox would have broken out in the colliery?—Out of the 40 cases probably 10 would be acute and would be taken in at different intervals. The weather conditions, perhaps, were not propitious. B

766. You have seen the table of the winds, have you not?—No; but I know this; you may, of course, have two or three epidemics and know nothing, and then you may have a very serious outbreak. I cannot explain all the vagaries of infectious diseases. It applies to all of them and is not confined to small-pox. C

767. You cannot suggest any theory to account for all the facts?—Not all of them; but one that has been referred to accounts for most of them.

768. I am asking whether it accounts for the particular one here. The hospital in full operation, 30 to 40 patients, a number of acute cases, you may take it for three months in this village, which is outside the half-mile radius, with the population that has been described passing backwards and forwards, and yet there is not a single case of small-pox. Does that surprise you or not?—No, it does not. D

769. Why?—Because I assume there will be. The conditions have not been favourable, so far. E

770. Why do you say that?—Because cases have not occurred.

771. Then in favourable conditions sooner or later you think a case will occur?—Yes. F

772. Probably an epidemic?—Yes, probably so; like the one at Purfleet. In the case at Dagenham it was some time before there were any cases round about.

773. You have given us two cases at Fulham and Dagenham. Have you investigated any other small-pox cases in London?—No, not on the last occasion; but throughout the county we have had a good many cases. G

774. I am speaking of the rest of the county?—No, I have not.

775. Then your observations are drawn from these two cases?—They are founded upon my reading of what has been the absolute result. H

776. You do read, then?—I do read occasionally.

777. And you have read the report of the Local Government Board, I suppose?—I have read all of them, I think. I

778. Do you know the report, "On the use and influence of hospitals for infectious diseases by Dr. Thorne" ?—Yes. February 11, 1904

779. He is a very well-known doctor, is he not ?—Yes, and it has been issued once or twice. Dr. J. C. Thresh.

A 780. This is the annual report of 1881. It is at the beginning of the page in the book "On the use and influence of hospitals for infectious diseases by Dr. Thorne." At page 41, taking the case of Nottingham, there is this: "At Nottingham 234 cases of small-pox were received between December 1871 and February 1872 into a new wing which was immediately continuous with the workhouse buildings and which was on one side bounded by a narrow thoroughfare the windows of the small-pox wards and of the outside dwelling-houses being only 44 feet apart. Every effort was made to secure trustworthy information as to the spread of small-pox either into the workhouse or the houses adjoining both by application to the officers of the sanitary and poor law authorities and the medical practitioners then resident in the neighbourhood but no such ~~spot~~ ^{spot} could be heard of. On the contrary the dwellings in the vicinity of the ward buildings appear rather to have exhibited immunity from the disease." Is not that a very surprising circumstance ?—No, not to anyone connected with public health. We know all these epidemics of disease, and things of this kind occur which it is a little difficult for us to explain.

781. It cannot square with any theory ?—Yes, you may say so.

E 782. Mr. UPJOHN: I should have read on to the next three lines ?—Negative evidence is also referred to. Negative evidence on matters of this kind is of no value.

F 783. Mr. ASQUITH: I am going to read it. Negative evidence, however, of this character loses much of its value in the case of small-pox by reason of the large amount of vaccination which is carried out in most districts when small-pox becomes prevalent ?—Yes, my evidence is positive.

784. Is it ?—Yes, in one or two places in these districts I have referred to.

G 785. Are you prepared to say the inhabitants of Purfleet are thoroughly vaccinated ?—I know how far they are vaccinated—every person.

786. You are prepared to speak to that ?—Of course.

H 787. "That this source of error must be taken into consideration with respect to Nottingham is within my own personal knowledge, and in forming any conclusion as to the small extent of the spread, if any such spread took place, under circumstances such as obtained at Maidstone." That is where the small-pox hospital is ?—Yes.

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788. "Regard must be had to the same point." That is an important element, is it not? The question of whether a population is vaccinated or not vaccinated is an important element?—Yes, to a certain extent, undoubtedly the larger the vaccination the less disease you get. A

789. That is one of the factors we have to take into account?—Yes.

790. Have you had a diversified experience, or are you speaking from your reading? Do you know of the small-pox hospital at Hornsey?—No. B

791. Or at Croydon?—I do not remember it. No.

792. Liverpool?—No; of course in the Reports of the Royal Commissions, and so on, one has read about these hospitals. Yes, I have heard of Liverpool.

793. That is all you can say?—Yes. C

794. And the various hospitals in the county of Staffordshire?—No.

795. Can you speak at all from your own personal experience, or from what you have heard, of any other case of a hospital, beyond the two you have given us, Dagenham and Fulham, in which the hospital has proved to be a source of infection?—Yes, the small-pox ships, and you get it from Pasteur. D

796. I am speaking of your own personal knowledge?—No, an epidemic of small-pox only occurs at intervals, and there are very few people who take the opportunity of investigating it. E

797. We shall see. You will find there are a great many. First of all, tell me what was the number of persons in the hospital at Fulham?—I cannot tell you from memory. It is in your book, is it not?

799. No, it is in Dr. Power's report?—I know the danger was realised, and they cut down the number of patients to be admitted, and I believe ultimately it was under 40. F

800. Can you tell me the maximum?—I cannot tell you.

801. Nearly 700 at one time, was it not?—At one time it was very much over-crowded. G

802. I gather from your view, and from the paper you read at the Epidemiological Society, and which we have all read with so much interest, that a most important factor is the number of patients?—It is a matter of importance undoubtedly.

803. I will read you one passage from the book. I think his Lordship has it. This is at page 120 of the "Transactions of the Epidemiological Society of London, 1901-2." You are in favour, I think, of marquees and tents rather than permanent buildings?—I think great danger arises from aggregating the patients together. That is my view. If you spread them out so that the danger from I

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them gets very largely diluted, then you reduce the power of infection in every case.

A 804. I do not know that absolute safety can be obtained at all, but if you take them in numbers of not more than 40 diverted at a different spot the danger is so much reduced. Is that what you say? —It is reduced, undoubtedly.

805. I think 40 is the number you mention here?—I do not know.

B 806. Not containing more than, say, 40 patients?—Yes, but I suggest they should be on Canvey Island where there is more or less space.

807. At any rate you think that is a safeguard?—I think it is about as safe as we can make it.

C 808. I have the table now for Fulham. It is at page 321 and I find in Table 6, which is the table my friend referred to yesterday, in the left-hand column the cases of acute small-pox admitted. 327 in the first period, 714 the second period, 679 the third period, 292 the fourth period, and 515 the fifth period?—Yes, very well, if you calculate that out——

D 809. That does not show how many of them were in the hospital at the same time?—No, but it proves to you it is not going to be 40 a year taking the nine months.

810. Then you will have to reduce your view that 46 is the safe number if that is the case?—No.

E 811. Mr. UPJOHN : You will find some tables there—at page 320, for instance?—I think if you refer to page 320 you will see the average admissions 13 in the fortnight, apparently followed by 13, 18 and 21 in successive fortnights, that small-pox once appeared in the one-mile area.

F 812. Mr. ASQUITH : That supports your view that it is the aggregation of numbers that constitutes the real source of danger?—Yes. If you get the 13 within the fortnight the number in the hospital will probably be from 40 to 50, because some of them come in the early stage, and then some come weeks later.

G 813. I see in the fortnightly period beginning 20th April 115 were admitted?—Yes, the epidemic had then been rising.

Mr. UPJOHN : What page is that ?

H 814. Mr. ASQUITH : 118. It is 115 acute cases within a fortnight, and that is very much more than 40. How many patients at the most were there during the epidemic you have spoken of at Purfleet that were on the ships?—I have got my list. You have got it from the Metropolitan Asylums Board—several hundreds.

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815. Several hundreds at a time?—I believe so. I see at the end of 1901 there were 177 under treatment, and it was considerably higher than that.

816. Dr. Buchanan's report on that is at page 25?—Yes.

817. Between November, 1901, and June, 1902, the average daily number of patients on the ships was 164?—Yes. **A**

818. I see it says: "Between November, 1901, and 1902 the average daily number of patients on the ships was 164; the minimum and maximum daily number was 97 and 271"?—Yes.

819. I see you said yesterday in your evidence at Question 542 in the Shorthand Notes, between G and H: "And what did follow was exactly what we might have expected, that when the cases on the ships got to 130 and 150 the disease broke out at Purfleet?—Yes. **B**

820. Then it was not till cases had got to 130 and 150 that the disease broke out across the river?—No, not on this occasion. **C**

821. That is what we might have expected?—Yes, I think so, because the ships are a very considerable distance away.

822. 700 yards?—Yes. If they had been nearer we should have had the epidemic earlier, and much more severe. **D**

823. 700 yards is less than half a mile?—Yes.

824. During the whole of the time that this epidemic took place in Orsett Union small-pox was raging in London, was it not?—Yes; not raging, but it was prevalent.

825. It was also very prevalent in West Ham?—Not until later; it did not commence in West Ham until later than in London. **E**

826. Substantially I am right—speaking of 1901 and 1902?—Yes; but it commenced later in West Ham than in London. It extended there from London.

827. During the time that the epidemic was prevalent in Orsett small-pox was prevalent in London and West Ham?—Yes; you have in one of those tables the cases that were occurring in West Ham, which showed that it occurred in Orsett before any cases occurred in West Ham. **F**

828. I observed, looking at the map, in Dr. Buchanan's report that there is a line of railway coming through those marshes to Purfleet—is that the Tilbury and Southend Railway?—Yes. **G**

829. It goes the whole way through Purfleet and Grays to Tilbury, does not it?—Yes, it does.

830. And there is constant communication backwards and forwards along that line with London and West Ham?—Yes. **H**

831. Tilbury Dock is a dock which is a great deal used by foreign shipping?—Yes.

832. Did the first case that occurred in the Orsett Union break

out in Grays?—No, the man lived in Grays, but he worked as a signalman on the line at Purfleet. February 11, 1904

833. But he lived at Grays?—Yes. Dr. J. C. Thresh.

A 834. He was attacked at Grays?—I do not know where a man is attacked in going backwards and forwards, to and from his work.

835. But he fell ill at Grays?—Yes.

B 836. In point of fact he was a man who was living in Grays and fell ill of the disease in Grays?—Yes, but that occurred with a very large number of people who work at Purfleet, but they are put down to other places where they live.

837. Your view is that they get the infection by working at Purfleet?—Yes, quite so. You will see that no other case occurred at Grays except the two that were disinfected and stamped out.

C 838. From whatever cause, whether from the hospital ships or from contact with some wayfarer in London, or some sailors at Tilbury Docks, supposing a man residing at Purfleet got the disease, he would become himself, would not he, a centre of infection?—Quite so, but whereas in other parts of the county we stamped out the centre of infection we could not stamp it out in that particular district.

D 839. But whatever weight may be attached to aerial convection, I suppose actual contact with a case of small-pox is the surest way of catching it?—Quite so. I am not suggesting that a majority of those cases were due to aerial contact. I say that the heaping up of the infection in a district is due to that cause, but each time a person was so infected he became in turn a centre of infection.

840. He disseminated the infection right and left?—Yes.

E 841. I am sure you must frequently have observed in your practical experience that which all other medical practitioners tell us, namely, that cases of small-pox in their earlier stages are very frequently mistaken and overlooked?—Undoubtedly.

G 842. And I suppose there is no disease where it is more common to mistake the earlier stage for chicken-pox or measles?—That is so.

843. And that is so sometimes right through to the very end in a mild case of small-pox?—Yes, in a mild case, but in some it is not.

844. I am speaking of mild cases?—Yes, that is so.

H 845. Let me remind you of what Dr. Buchanan says at page 21. He is speaking you know of this very epidemic?—Yes.

I 846. "I have dealt above with administrative measures which in the first instance call for scrutiny in considering the causes of this severity of incidence. As has been said, failure in arrangements for prompt isolation of small-pox cases did not here operate to spread the

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disease. Removal of notified cases of the disease to hospital was from the first carried out with little delay, and was well maintained throughout the epidemic. The operation of other causes of spread of small-pox was traceable in many instances. The occurrence in a dwelling of one or more mild cases of the disease which were not recognised as small-pox was not unfrequently traced when the enquiry was made by the officials of the sanitary authority in consequence of the occurrence of later cases which were unquestionably small-pox. In some of these cases the patients, while suffering from mild small-pox of this kind, had continued to pursue their ordinary occupations." You agree that that was so?—Yes, that occurred all over the county. A B

847. "Infection was also traced in certain instances to persons who had not been medically attended at the beginning of their illness and while suffering from small-pox had remained on premises used for business purposes. The prevalence of chicken-pox also gave opportunities of mistakes in diagnosis, and there can be no doubt that the mistaking of small-pox for chicken-pox did in several instances lead to local spread of disease"—Yes. C

848. All those circumstances would have to be taken into account?—Quite so, in every outbreak, and may I point out to you that one of the cases that occurred there was at Tilbury Dock? It was a case of chicken-pox, which was regarded as a case of small-pox, but all those were cases where upon the isolation of the patients the thing was stamped out, but in Orsett, where you have people residing in two-storey cottages, it spread about the district, and you could not stamp it out. D E

849. Do you agree to what Dr. Buchanan says lower down "as to vaccination I have pointed out that the condition of the inhabitants of the union in regard to protection by vaccination was in several respects less satisfactory than in the majority of communities of like class in the country"—I went very carefully into that, and I found that there are much worse vaccinated communities in Essex than that—as for instance in West Ham, where the guardians have done very little indeed. That is where we ought to get small-pox, and in Barking, Walthamstow and Leyton, which are amongst the badly vaccinated communities, but we do not get it there. F G

850. Where was the "Cornwall" training ship?—Nearly opposite the small-pox hospital.

851. Where is it on the map?—It is on one of Dr. Buchanan's maps. H

852. The second map?—Yes.

853. Mr. ASQUITH: If your Lordship looks at the second map it is just a little beyond the quarter-mile radius from the hospital ship?—Yes, that is so. I

854. Which, I believe, is taken from the centre of the ship?— February 11, 1904
Yes.

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Mr. UPJOHN : There is no other area.

A 855. Mr. ASQUITH : Was there no case on the reformatory ship?—No, certainly not. I should have been very much surprised if there had been.

856. Why?—Because it is a properly vaccinated community. Nobody would have been responsible for keeping a lot of lads on a ship if they had not been vaccinated. X

B 857. There is a garrison at Purfleet?—Yes, and they were vaccinated.

858. And they did not get it?—They did not get it. They were kept in bounds until they were all vaccinated or re-vaccinated.

C 859. If you look at pages 8 to 9 of Dr. Buchanan's report you will see this: "Condition of the population of the Orsett Union at the beginning of the outbreak in respect of protection against small-pox, by vaccination and re-vaccination." Conscientious objection existed at this time, and it was effective.

D Mr. Justice FARWELL : There is a good deal of conscientious objection in Nottingham, is not there?

Mr. ASQUITH : Yes, there is, I am told, but it is a decreasing quantity.

E 860. Conscientious objection appears to flourish in this part of Essex, as your Lordship will see on page 8. In 1897 there were 289 cases of conscientious objection; in 1898, 354; in 1899, 182; and in 1900, 247. Then comes in the last column: "Cases not finally accounted for," which ranges from, in 1897, 52·5 per cent. to 35·5 per cent. in 1900 of the births registered. Then on the top of the last
F the proportion of cases not finally accounted for (including in recent years those in respect of which certificates of conscientious objection had been obtained) increased rapidly after 1891, and that during each of the six years 1895-1900 more than one-third, and in three of these years more than one-half, of the children whose births were
G registered in the union were not vaccinated at the date of the returns quoted. I ascertained from the vaccination officers' books that neglect of vaccination in recent years has prevailed to the greatest extent in South Stifford in Grays, and in West Thur-

February 11, 1904 rock." West Thurrock was one of your bad places, was not it?

—Yes.
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861. "This observation is borne out by study of the certificates of conscientious objection to vaccination which have been received since the Vaccination Act of 1898 came into force. Relatively to population, the numbers of such certificates coming from these three localities has been far larger than elsewhere in the Union." I want to ask you about the population at Purfleet. What class of people were they?—All labouring people living in four-roomed cottages. A

862. I rather gather from what you have said that the greater number of people worked in the daytime but do not sleep there?—Yes. They all go to the oil works and paper mills. B

863. Living in other parishes?—Yes, and they carry their disease to other parishes. I think whilst you are referring to vaccination you should refer to the table I give on page 117) which shows that in the Orsett district in 1897 there was only 20·9 per cent. of unvaccinated and postponed vaccinations per thousand births, and that the average for the county of Essex was 25·8 per cent. Therefore the Orsett district was actually better vaccinated than the county as a whole. C

864. I am very sorry to hear it?—And during the outbreak the majority of cases that occurred were in children. It was children you were referring to in this table in Dr. Buchanan's report. D

865. Do you suggest that the adult population was better vaccinated than the children?—No, but there are more of them about Purfleet, and before the outbreak of course they had not been vaccinated. E

866. You do not suggest that taking a population such as you describe there would be a larger percentage vaccinated of adults than children?—Yes. If you look at this table not 10 per cent. of the cases escaped vaccination. F

867. These tables of yours only deal with children?—Yes, but of course children grow up.

868. They do not always remain in the same place?—No.

869. What possible light could you throw on this question to show that from 1883 to 1887 a certain percentage of the children were vaccinated?—Because you quoted the figures in Dr. Buchanan's table. No doubt the majority of those people in Purfleet had been there for a great many years. G

870. Are there no other facts beyond those you have told the Court—no other special circumstances connected with this case—which lead you to ask the Court to adopt the view that the hospital is a dangerous source of infection at a distance of half a mile?—I have given my experience for what it is worth. I have no doubt you have heard a good deal of the experience of other medical H

officers. I can only give you what I have read or heard, and the chief factors are those which I have relied on. February 11, 1904

871. Let us look at the case of Dagenham. Dagenham was, as I understand, a hospital which was erected for the use of West Ham?—Yes. Dr. J. C. Thresh.

A 872. Outside the county and borough?—That is so.

873. Just look at your Table E; the hospital is in the Romford rural district, which includes all those parishes which are there?—Yes.

B 874. How far is Hornchurch from the hospital?—The parish comes right up to the hospital boundary—the stream divides them.

875. I want the village where the rural population is to be found—is it up in the right-hand corner?—It is spread all over—it is a most extraordinary parish. There are three or four centres of population in it.

C 876. The main place where the church is—how far is that from the hospital?—I should think $1\frac{1}{2}$ miles.

877. Had you many cases there?—Certainly.

D 878. A substantial number of those 42 cases would be in that part of the parish?—Yes, nearly all there and south of it.

879. I am told if you measure it there is a distance of 3 miles between the church and the hospital. Just look at it?—Why I have not mentioned Hornchurch village is the fact that the cases that occurred there were most of them of people working at different parts. I do not say that they became infected in Hornchurch.

E 880. But they are put down as from Hornchurch?—Yes, but the parish comes right down the river. Hornchurch village, I daresay, comprises about half of the whole population of the parish community.

F 881. Is it 3 miles from the hospital?—Yes, very likely it is by the high road.

882. What were the other places you mentioned in Hornchurch where you say there were a number of cases?—I say the houses scattered between there and the river.

G 883. I thought you mentioned a name?—No, I did not mention any names. Many of them work at Dagenham Docks.

884. Is there any other aggregation of houses in Hornchurch village except about the church and the village itself?—Yes, but they are beyond that.

H 885. Farther north?—Further north, a very large aggregation.

886. How do you account for these 42 cases—6·6 per 1,000 in Hornchurch?—Wherever you have centres of infection there is greater risk of receiving the infection whether it is due to being airborne or from contact with cases. Here you have a large number of

I cases on the Purfleet side. You have cases beginning first at

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Dagenham, and there is constant communication going on between most of those districts.

887. All the cases in Hornchurch can be accounted for, can they not, by possible or even probable contact with infected persons, either at Dagenham or at Purfleet?—We came to the conclusion not. A

888. Why not?—Because as to so many of them we could not trace that they had been near any infected person.

889. And that was your only reason?—Yes.

890. Now let us go to Rainham—where is Rainham?—Very near Purfleet, just beyond Purfleet. B

Mr. ASQUITH : I think your Lordship will find it on the right.

The WITNESS : It is a very small place.

891. It has got a population of 1,700?—No, I think not.

892. Does not your table say 1,725?—I was thinking of Rainham village. The village has not got that, but the whole parish may have. C

893. There were 16 cases there—a very high percentage—higher than at Hornchurch and Dagenham?—Yes.

894. 8·1?—Yes.

895. What is the distance between the village and the hospital?—About two miles—it is on the main road between Purfleet and Dagenham—it is between two fires. D

896. One of the fires being Purfleet, which was full of small-pox at this time?—Yes.

897. And the other Dagenham?—Yes. E

898. Or one might, pursuing the road still further, say East Ham?—Yes.

899. There is small-pox all along the road?—Yes, undoubtedly.

900. Would you not expect that, isolating the hospital and treating it as the source of this outbreak in the neighbourhood—to find a higher percentage of cases in Rainham than in Dagenham itself?—No, one cannot explain all the vagaries of the disease. There were some parts of Essex where you had small-pox and where you were able to stamp it out, but the singularity is that the cases occur in excess in these districts. F

901. I am pointing out what seems to me as a layman the difficulty that in this case of the Dagenham Hospital the percentage seems to increase with the distance from the hospital?—Yes, because you have perhaps not only got a source of infection in the air, but you are on the direct road between two places. G

902. Do not you think that it is a more probable and rational theory as to what happened at Rainham to attribute this very high H

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percentage to people going backwards and forwards to and from Purfleet to infected places?—I should draw no such conclusion.

903. Wennington is a small place?—Yes, very.

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A 904. It works out at a very high percentage?—That might be purely the accident of a single case introduced.

905. You would not draw any inference from that?—No.

B 906. Nor upon the single case at Upminster?—No. If it had been a matter of simply going backwards and forwards to London I should have expected to find more cases at Upminster than at some others.

907. Where is Upminster?—A little north.

908. It is about the same distance from the hospital as Hornchurch is. You had during the whole of the epidemic the hospital at Orsett itself, had you not?—Quite so.

C 909. It seems to be rather near the boundary of the Grays urban district?—It is fully a mile away.

910. A mile, is it?—Yes, a mile from any population. It is a most outlandish place to get to. You would not want to go there twice.

D 911. No, I am quite sure of that?—It is an ideal site.

912. How many people had you in Orsett Hospital?—Possibly about 140 or 150 at one time.

E 913. So, in your view, if the conditions had been what we call favourable with 140 or 150 people you might have expected, might you not, some infection from that source?—I very little doubt there were some. There were some cases we could not account for amongst people working in the fields in the neighbourhood of Upminster.

F 914. At what distance?—Working within the half mile radius. If a labouring man is in a field you cannot specify any distance. He is working all over the field, perhaps up to the hospital boundary. Only there it is several acres in extent.

915. And you think he may have got it from the hospital?—Yes, we thought so.

G 916. Where do these men live?—Further out in the country.

917. What was the nearest group of houses to the Orsett Hospital?—There are one or two farms within half a mile.

918. Did they get any small-pox?—Not that I am aware of.

H 919. What sort of farms are they?—Small farms.

920. Selling milk and dairy produce?—No, I think not.

921. What did they sell—market garden produce?—No. I suppose they simply fatten cattle, but if you want the details of the population you must get them from the medical officer.

Mr. UPJOHN : I am afraid I have released him.

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922. Mr. ASQUITH : Who is the medical officer ?—Dr. Corbett. He took charge of the hospital. I thought I saw him here a moment ago—yes, Dr. Corbett is here now. Dr. Corbett will be able to show that there was no possibility of milk having anything to do with the infection. Moreover, milk has not been suggested as being A responsible.

923. Mr. ASQUITH : I am not suggesting it ?—Then that is all right.

924. I want to ask you one or two questions about this site at Nottingham. You have been there ?—Yes. B

925. You several times in your evidence in chief, in answer to my learned friend, spoke of it as a site intended for the accommodation of a large town. Do I understand that your objection or main objection to this site as a site for a small-pox hospital is based on the assumption that it is going to be extended and used for a considerably larger number of persons than at present ?—I should object to it in toto as a hospital for small-pox ; but that is the chief objection, because if you get a hospital for small-pox you put it up for 10 beds, but if you get an epidemic, and you have 100 beds, you must go and put your temporary accommodation there. C D

926. Supposing they are going to use this hospital as it is used at the present time, that is, in other words—I will not pin myself to the precise figure—for 40 patients ?—Yes.

927. Would that modify your view as to the dangerous results ?—No, I should say that I would allow them to put up 40 cases, until such time as they could get a proper site for a proper hospital, and I would give them 12 months in which to do it. E

928. That is a suggestion to the ratepayers of Nottingham ; but what I was pointing out is this—and I must get a clear answer to this as regards your opinion : so long as the hospital is confined to the accommodation of 40 patients, is it a source of danger, first of all to the people within a quarter of a mile, and in the next place to the people within half a mile ?—If a considerable proportion of those were acute cases, I should say yes. F

929. As to both sets of people, the quarter of a mile and the half a mile ?—Yes ; although the danger decreases as you get further away, it is utterly impossible to say where the danger diminishes or becomes negligible. G

930. Have you any view as to about where it ceases ?—No.

931. None at all ?—None whatever. H

932. I think you expressed the opinion in your paper that it will go as far as three miles ?—I believe in certain circumstances it may.

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933. Dagenham must be a case of about three miles?—No, the people there go constantly close to the small-pox hospital on their way to their work. They do not work in the village, and the majority of Dagenham is down by this hospital.

A 934. I only want to get your opinion as a medical man. In your view, is a person living within three miles of a small-pox hospital in danger or not?—It depends on the small-pox hospital. If there are hundreds of acute cases, I think there is even then a remote possibility of being infected, but it would be remote.

B 935. Supposing there are hundreds of acute cases all aggregated at the same time, there would be a remote possibility?—There would be a remote possibility.

936. How about two miles?—Then the probability is greater, but it cannot be mathematically demonstrated.

C 937. Are you prepared to pledge your opinion to my Lord as an expert in these matters, that this hospital upon the hypothesis you know of being used for 40 patients, and 40 only, is a source of danger to the people in the cottages and villages around it?—Then I say "Yes" to that, undoubtedly.

D 938. Why?—I have gone into all this before.

939. Indeed, you have not; on the contrary, in your book you suggest the very opposite. Why is it a source of danger?—Because you might get a number of acute cases at one time, in which case infection is concentrated; and under those circumstances it may spread a quarter of a mile, or possibly half a mile.

E 940. Now we have got another hypothesis. You may get a number of acute cases?—Yes.

941. What proportion of acute cases?—Assuming 40 beds, you may expect that you would have 12 or 14 acute cases at a time.

F 942. Would those 12 or 14 all be serious acute cases?—Yes, because they must be associated with a number of other cases that have passed the acute phase or have not reached it.

G 943. When would small-pox cease to be infectious?—I could not say; but as far as being carried in the air or through the air is concerned, it would be only for a limited period.

944. Does it not cease to be infectious when the period of suppuration ceases?—No, not quite as soon as that, but soon after. I do not think that the acute infectious stage lasts very long.

H 945. Does it last after suppuration?—I am not prepared to say, but that is several days.

946. I do not care how many days it is. I want to get your opinion—in your view, does it last after that?—Do you mean whether the patient himself would infect anyone else by personal contact?

I 947. Take that first?—Yes, medical men would agree that it would be dangerous to send a patient out of hospital until the stage of suppuration was passed.

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948. You say that the patient would be infectious, although suppuration had ceased?—Yes.

949. Infectious by contact?—Yes.

950. Is there any danger of aerial convection, as it is called, after suppuration has ceased?—I should doubt whether there is much because I am basing my experience on cases occurring in houses. I am thinking of one just now where every person who went to a certain house during certain days was attacked, while those who visited before and after did not contract small-pox, and that coincided with the time when the eruption was becoming postulous. A

951. I want to get this because it is very important. Then what is called desquamation takes place—that is after suppuration has ceased the patient is not infectious, is he?—I think he would be infectious to any one coming in contact with him. B

952. But not to the outside world?—No. C

953. I suppose, under proper medical treatment, a patient would not be allowed to go out of the hospital into the grounds to exercise until suppuration had ceased?—No.

954. And this process of desquamation had begun?—No.

955. In a well-regulated hospital you would not have a suppurating patient outside the building?—Certainly not. D

956. Then although the desquimating patient ceases to be infectious unless it be by contact, I suppose he is retained according to the ordinary practice of the profession for some time because his appearance is unsightly and he is uncomfortable in various ways?—Yes, you can take an instance of that—that although all organisms may not be given off from the body into the air they still may be contained in the scales which are formed, and these may dry and be rubbed off, and there is no doubt that those coming in contact with other people may spread the disease. You do not know if a man is out in the hospital grounds rubbing his hands and spreading the dust from his hands all through the atmosphere whether that may not spread infection to people round about—you do not know whether it will or not. E

957. You have heard of the man walking about the grounds of this hospital in September of last year when he was in a state of desquamation and there was no contact with any one. Would a person of that kind be a source of infection through the air?—No, probably not; it simply shows the approximate of the place to outsiders. That is all I suppose that was quoted for. F

958. You spoke of the downcast shaft, which I think you saw yourself at the coal pit?—Yes. G

959. I understand you to suggest that if these organisms are being conveyed by what you call a favouring wind in that direction the operation of the shaft may be to suck them down into the mine? I

—If they are in the air they must go down with the air into the mine.

960. So I should think if they are there?—Yes.

961. How far off is it?—I believe it is close on the half-mile
A radius.

962. 940 yards, I think, but I daresay you did not measure it?
—No, I did not, but on the map which was given to me it is shown just on the outside of the radius. Our measurement was from the boundary, I believe.

B 963. Do you attach any importance and what importance to the currents of air—the state of the wind—in this matter of aerial convection?—Yes, I think so, just in the same way as you would in connection with smoke nuisance. A good deal depends upon the direction of the wind and the conditions of the atmosphere—whether
C it is damp, muggy, dry or fine.

964. Is that, in your view, the factor in judging whether a hospital was dangerous or not would be what was the prevalent wind and other conditions of the neighbourhood—its residences, workshops and so forth?—That would be one of them.

D 965. You do not suggest that the passengers on the Midland and Great Northern railways are exposed to any danger from the position of this hospital?—I think it is very slight, but I think it is there.

E 966. You do?—Yes. I do not care to go into it, but I may say that a certain part of the county from which we have had cases of small-pox which we cannot account for is the part which runs nearest to these small-pox ships. But it is a matter that it is practically impossible to prove.

F 967. In reference to the matter of the wind, that is taking the current of air as a factor in the situation, you do not agree with the view of Dr. Power?—If you like to tell me what that view is I will tell you. He thinks that the wind has nothing to do with it.

G 968. He thinks that the anti-cyclonic condition is most favourable to the spread of the disease?—Yes, that shows that under certain conditions it is more favourable than under others, and with that I agree.

H 969. With the anti-cyclonic condition there would not be any wind blowing, would there?—There would be a calm, but there must be a movement of air, because if there is a difference in pressure there must be a movement of the air towards the space where the pressure is least, although it may not be a cyclone.

I 970. In your view is the atmosphere more favourable to the spread of small-pox when there is a wind blowing or when it is in the condition of calm?—I think in an anti-cyclonic condition, when you have a calm.

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971. You agree with Dr. Power?—Yes to that extent, but you said “no wind”—and there is a difference between “calm” and “no wind.”

972. In an anti-cyclonic condition—a condition of complete calm—how do these germs travel two or three miles?—How does smoke travel from a smoky chimney two or three miles?—But it does it. A

973. I should not say that it did?—If you have got particles of matter—infinately small organisms say—floating in the air they may travel many miles before they fall to the ground.

974. Surely they travel faster, do not they, and get a longer way in a shorter time if there is a wind blowing than if there is calm?—Yes, but you look to much more than that. It may be possible for a person to take one germ of typhoid fever daily and not suffer from it, but if you have got 12 or 20 germs you may get typhoid fever. In the same way, if you have germs of small-pox about and you encounter one you may resist it, but if you get a great number you may succumb. B C

975. Then you think that the wind going at a greater rate may scatter the organisms and in that way render them less infectious—in other words, that infection is rendered less dangerous during a period of wind than in a period of quiet and calm?—Yes, I think so. D

Re-examined by Mr. UPJOHN.

976. It has been put to you and you have been asked for the purpose of certain answers that the hospital would be limited to 40 beds?—Yes. E

977. I suppose if an epidemic took place it would not be at all probable that they would limit it to that number?—I am afraid they could not help themselves. They have got the space and they put the tents and things up. F

978. Let us treat the matter on the assumption that it is limited to 40 beds. Do I understand you to say that about one-third or so of those cases would be acute?—Yes.

979. On the average, of course?—Yes.

980. Assuming that to be the state of things—40 beds, and the normal number of acute cases—in your opinion would there be any risk then to persons on the highway in front at a distance of about 50 feet?—Yes, I think so. G

981. I mean a serious risk?—Yes, I think sufficient to render that site objectionable for 40 beds. H

982. I understand your answer to my learned friend to be that you think there would be a risk up to a quarter-mile limit under those circumstances?—Yes, I think so.

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983. You mean a serious risk?—Yes, I think beyond the quarter mile one could not regard it as serious, but there would be a certain risk.

A 984. Take the cottages—the Moorbridge cottages down to the south?—Yes, those were certainly well within the danger area.

985. You think that those are within the dangerous area?—Yes, but I think there are several other cottages there in connection with the forge and the corn mill.

B 986. We have got the distance round?—Yes, and there is a railway station at Bestwood where people would be liable to walk about and wait on the platform, which has not been mentioned. I know I walked up there and had a talk with the men.

C 987. There is a station there, you say?—Yes, it looks right down on to the hospital, and you can watch everything that is going on there—it is a very objectionable sort of arrangement.

988. It is marked on the plan?—Yes, I daresay it is used chiefly by the colliers.

989. That is the Bestwood Colliery station?—Yes, that is the one.

D 990. Do you think that there is a risk there?—Yes—that is, within the danger area.

991. My learned friend put to you that during the desquamation stage the patient is not infectious except by contact—is that true at any distance, however short?—I would not like to say that he is not infectious at any distance.

E 992. For instance, my friend put a date—the 3rd September—when a man is said to have been standing on the river-bank on the hospital side and talking to persons in the allotment gardens on the opposite side of the river?—Yes.

F 993. If they are near enough to maintain a conversation, is it possible to say that there is no risk?—No, it is not possible to say so. No, I do not think so.

G 994. In your opinion, is there substantial risk there?—I think it would depend on the stage of the disease. If the man was convalescent, and had got to the end of that stage, there would not be; but if he was coming out still with the crust upon him, I think he might be.

995. I mean with the scales still falling from him?—Yes, I think there is a certain amount of danger then.

H 996. You have given us a frontage to the road of the grounds?—Yes, 1,000 feet.

997. If the patients come out in a stage of convalescence, and are walking about there, do you think there is any special risk to persons using the highway?—It is a little difficult to say, but what

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I understand is this, that perhaps people were riding on vehicles who can see over. They would be almost more exposed to risk than those who are walking under the fence. One cannot quite see what would be the effect of a tall fence like that.

998. When I said "passing along," I did not necessarily mean walking. We have heard there is an omnibus along there. Would there be any sort of risk to people who use the omnibus?—If you can see right over you are directly exposed to the risk of infection. A

999. Do you say that there is a risk or not?—I think there is.

1001. A serious risk?—Oh yes, a serious risk—I think that is one of the most dangerous risks. B

1002. From the date that my learned friend has put to you, apparently the hospital has been at work for just about three months?—I think so.

1003. I think that was just about the period that we noticed yesterday in looking at the table that elapsed between the hospital activity and the occurrence of cases in the surrounding district?—Yes. I am not at all surprised at those cases not having occurred. C

1004. There is always an interval?—There is always an interval, even if other things are favourable. D

1005. Of course, there is a good deal of chance as to when it happens?—Quite so.

1006. My learned friend put it to you that you had not investigated in any other cases than those you had spoken to. You mentioned that you had investigated some others in your own county?—I said that I had investigated altogether 3,000 cases spread all over the county, in about 50 different districts. E

1007. But besides your own experience, are you familiar with the facts as reported by the Local Government Reports that have happened at Sheffield, Bradford and other places?—Yes, and I have had occasion to make enquiries outside the county in connection with various matters. F

1008. And have you taken those other reported cases not within your own personal experience, but reported, into consideration in forming your opinions?—Yes, certainly. G

1009. My learned friend put to you the passage from Dr. Thorne's report on page 41. My learned friend also read the next passage, which very much qualifies it, which I need not trouble you with now; but this work of Dr. Thorne's was originally published in the year 1880-81?—Yes. H

1010. And it was re-published in 1901 with a report by Dr. Power, the present head medical officer to the Local Government Board?—Yes, this was published before Dr. Power had commenced his investigations.

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1011. Mr. UPJOHN : My Lord, on page 3 of the preface there is this statement of Dr. Power's opinion upon Dr. Thorne's investigation : " The danger of the spread of small-pox in the neighbourhood of hospitals in which patients suffering from that disease are aggregated, which Sir R. Thorne had in two instances found reason to suspect, and which was fully illustrated by the report in the same volume, ' On the influence of the Fulham Small-pox Hospital on the neighbourhood surrounding it,' has since been exemplified by the further observations on the influence of the Fulham Hospital published in the annual report of the medical officer of the Local Government Board for 1884, and by experience during epidemics of small-pox of Sheffield, Bradford, Warrington, Leicester, Gloucester, and elsewhere ?—Are you familiar with the authentic reports of what happened at those places ?—Yes, I have got them all here.

1012. " On the other hand in London the removals of small-pox cases to hospitals at a distance, instead of treating them in hospitals within the metropolitan limits, has been followed by a remarkable diminution in the prevalence of the disease " ?—Yes, it has fallen from about one-third to one-seventh of what it was.

1013. That is a fact that is well known to all gentlemen interested in this matter ?—Yes, to everybody.

1014. " In the years following the great epidemic of 1871 until 1885 minor epidemics recurred in London about every four years, but since 1886, the year in which the treatment of small-pox in hospitals within the limits of the metropolis was discontinued, the London death-rate for that disease (including the deaths from small-pox of Londoners in the hospitals outside the metropolis) has declined almost to vanishing point " ?—Yes, there is a chart in the report of the Medical Officer of Health for London which shows that most markedly.

1015. That is common knowledge to you professional gentlemen ?—Yes. I think you ought to have read the last paragraph on that page which was referred to by Mr. Asquith.

Mr. UPJOHN : My Lord's attention was drawn to it.

Mr. Justice FARWELL : Yes, I have read it.

1016. Mr. UPJOHN : I was going to ask you a question founded on that presently. I see there is another name well known in these matters—that is Dr. J. H. Bridges, who I think is an expert who reported to the Local Government Board in 1887 ?—On cases that occurred in the metropolis.

1017. In the small-pox hospital of the Metropolitan Asylums Board ?—Yes.

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1018. Where the remarks that he had reported on the Homerton Hospital? Then he refers to Dr. Power's report, and he says: "The facts so laboriously collected," &c. [reading to the words] "source of danger to the neighbourhood?"—The Local Government Board did not begin that investigation until it was pressed upon them by medical officers in the various parts of the metropolis that those hospitals were spreading diseases round about them. There was report after report saying that wherever these hospitals were they were getting a large number of small-pox cases which they did not previously have and the result was that the Local Government Board sent Dr. Power to investigate them. A

1019. And that is the statement of Dr. Bridges in 1897 which has been confirmed by subsequent cases in Sheffield, Bradford and so forth?—Entirely. B

1020. And the result has been that the hospitals have been removed from the metropolis?—Quite so, they have been taken down the Thames. C

1021. I meant to ask you this. When my learned friend was speaking about 30 patients, do you consider that to have 40 patients in a building of this size and surrounded by grounds of this size is a proper method or not?—No, it is not suitable for anything more than a temporary accommodation for a few beds. I judged that the hospital that was on it was for 10 beds. I cannot understand 40 cases being there unless it has been enlarged. They must have crowded them. D

1022. My learned friend has put to you the Orsett case, and I think some questions were asked as to Dagenham, when small-pox was somewhat rife in London at the time?—Yes. E

1023. And there were various communications with West Ham, East Ham, and so forth?—Yes. F

1024. Is there any reason to suppose that there was some communication with infected parts, say, at Purfleet—I am excluding the hospital ships for the moment, and also the Dagenham and the other places you have spoken of—Dagenham, Hornchurch, Rainham, West Ham and London, than between other parts in that same district on the railway—Romford district, for instance?—No, there is comparatively little communication there except with the docks. G

1025. What do you mean by "there"?—In the Purfleet neighbourhood, between Purfleet Grange and Barking. The majority of people that come along that line come to Tilbury or Southend, but the intercommunication between Purfleet and Orsett with London is very small. H

1026. But now take the Romford Urban District?—Yes, and take East Ham, Leyton, and Walthamstow, all of which are in my

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county, and from which scores of thousands of people go into London every day, and come back again at night. We have no outbreaks there comparable to what we had in the Orsett district.

A 1027. And when there was an outbreak it was stamped out almost immediately?—Yes, in Walthamstow, East Ham and Barking they were being introduced every day from London.

1028. As regards Orsett and Dagenham, your case is that there was some cause continuous?—Yes, over and above the causes that we had at work in other districts.

1029. Over and above common causes?—Yes.

B 1030. My learned friend put to you a question about negative evidence as to Purfleet garrison and the Cornwall training ship. What is the value of negative evidence in such cases as this?—It is of very little value indeed. If I knock you down, and one person saw me do it, I suppose his evidence would be of more value than that of 50

C persons who came and said that they did not see me do it.

1031. I suppose that is well recognised in connection with all infectious diseases, but in connection with small-pox you get the additional fact of vaccination?—Yes.

D 1032. Are children more likely to get it if they have not been vaccinated?—Yes, if they have not been vaccinated.

1033. Do old people?—Yes, but the effect of vaccination wears off in time.

E 1034. Amongst elderly people is there the same disposition to take it?—Not quite in connection with old people: as people get old, as regards infectious diseases, they become less and less subject to them.

Mr. JUSTICE FARWELL: That is rather consoling.

F 1035. Mr. UPJOHN: So that one has to investigate all the circumstances?—Quite so before you can form an opinion.

1036. Then again it depends on the acuteness of the disease and the number of patients suffering from it which have accumulated in a centre?—That appears to be an important factor, especially in connection with small-pox.

G 1037. I noticed that my friend asked you about Purfleet as a possible, if not probable, cause of infection to Rainham and Hornchurch, but I notice that there is a parish in between called Aveley?—I think it is not exactly between, or very little of it. There may be a little tongue which goes down, but it is very little. The

H population in Aveley is a little further north.

Mr. UPJOHN: Then I will not trouble about that.

1038. Mr. Justice FARWELL: Would you explain to me for

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my satisfaction this theory of aerial convection? What is it that is conveyed, is it a bacillus or what?—So far as we know infectious diseases are transmitted generally from person to person by microbe organism, it may be bacilli or micrococci. At all events they are organisms of minute size. We have not been able to ascertain or distinguish organisms and say that this is an organism which causes small-pox, but inasmuch as diseases of similar character are spread in that way, the inference is that small-pox is spread by microbe organisms. I may communicate one of the microbe organisms from my hand to yours, or in other ways it may be given off by the air or be given off by the pustules which would flow through the air when given off and which may come in contact with people, and in that way spread disease. A

1039. What Mr. Asquith called desquamation is, I suppose, the same thing as is called the peeling of the skin?—Yes. C

1040. Is there anything to show that that can be diffused to any extent by the wind? Supposing a man is walking in grounds in the peeling stage, would he be a source of danger to people in the proximity?—I believe, according to law, if a man exposes himself in that condition on the public highway he would be liable to a heavy penalty. D

1041. I want to know if you know from your experience how far a man in the peeling stage is dangerous to other persons?—I do not think we have any evidence of any kind that would help us in that. E

Mr. UPJOHN : There is something you wanted to know from Dr. Caskett, I believe, Mr. Asquith.

Mr. ASQUITH : It was only about the farms, but we know now that there were farms.

Mr. UPJOHN : Dr. Caskett was only coming to prove some figures, but if my friend would like to ask him anything I will call him. F

Mr. ASQUITH : No, I do not require him.

Mr. Justice FARWELL : I do not know whether you are proposing to take me through all the small-pox hospitals. G

Mr. UPJOHN : No, my Lord. If I may say so, I think your Lordship put the result of the evidence with great accuracy yester-

day when your Lordship said that these are materials on which the experts formed their opinions.

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A Mr. Justice FARWELL : I do not understand how the House of Lords came to make the intimation they did. If you are going to the House of Lords I will say something about this, and will invite them to express an opinion, because it is very important that the unfortunate judge of first instance should know whether he is to take a day or a week to try a case. If I have to hear evidence on the hospital, it will take at least a week.

B Mr. ASQUITH : The evidence as to the hospitals, to which I shall have to refer, and which is of a negative character, is a very much simpler matter.

Mr. Justice FARWELL : It is simpler, but on the other hand it is less conclusive.

C Mr. ASQUITH : I am not so sure about that, my Lord.

D Mr. Justice FARWELL : The mind is more moved by an affirmative than a negative. If there was a universal affirmative that all small-pox hospitals are a nuisance then all this evidence would be perfectly relevant, but when the issue is as to whether a particular hospital in a particular place, and particular circumstances, is a nuisance or not, that is a different matter. If I am to find on the general question, there must be an end to going into particular instances, but I am only dealing with a particular instance.

E Mr. ASQUITH : With regard to this particular witness, his evidence seems to go to this, that all small-pox hospitals are a nuisance.

Mr. Justice FARWELL : I think that is his view, but I am not going to commit myself to any opinion on this gentleman's evidence alone.

F Mr. UPJOHN : I have very carefully kept away from the very large major premises. The next witness is as to what took place at East Ham in connection with Dagenham Hospital. My friend has admitted the figures there. I do not think my friend has cross-examined to this—that if you have got a district to which you can remove cases, you can stamp out the disease unless there is some constant influence at work ; but I do not think it is worth while to pursue that. I want to call a short witness, because the officers of

G

February 11, 1904 the Local Government Board will be in attendance at 2 o'clock, and
 Dr. J. C. Thresh. your Lordship will probably like to take them as soon as possible, because they are public officers. Then, my Lord, I think I have one local doctor from Nottingham who I will take, and I think he will be a short witness. A

Dr. G. B. Wray,

DR. GEORGE BURY WRAY, sworn.

Examined by Mr. UPJOHN.

1042. I think you are a member of the Royal College of Surgeons and you hold the Diploma of Public Health, and you are Medical Officer of Health in the district of Basford, which includes the parish of Bestwood?—Yes. B

1043. Are you also in practice?—No.

1044. You confine yourself to your official duties?—Yes.

1045. You have had, I think, some personal experience of small-pox cases?—Yes. C

1046. There was an outbreak in your district, I think, only last year?—That is so.

1047. At Newstead, and I think you took charge of the hospital?—Yes.

1048. Have you for some years past made a study of small-pox?—Yes. D

1049. Have you had personal experience besides that at Newstead of small-pox hospitals?—No, only my own one.

1050. You are acquainted with the reported cases upon the subject?—Yes, I have read the question up. E

1051. In your opinion is a small-pox hospital capable of being a centre from which disease is disseminated?—I believe it is under certain conditions.

1052. I am not suggesting you knew that you can generalise from one instance, but, in fact, did you find that your hospital at Newstead operated to cause some infection round it?—Excuse me, my hospital was not at Newstead, it was in the borough of Nottingham. The cases came chiefly from Newstead, 10 miles away. F

1053. Where was the hospital?—In the borough of Nottingham, about $1\frac{1}{2}$ miles nearer to Nottingham than the hospital under discussion—the Bulwell Hospital. G

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1054. Was it found that cases occurred round the hospital?—I believe so.

A 1055. I mean had you any personal knowledge of them?—Only from the doctors who attended them. Personally, I did not attend them.

B 1056. I have just had a copy of the admissions put into my hand that were referred to yesterday, and at the end of that there is this paragraph (I think your Lordship has now a proper copy of them) “that at the time of the Newstead outbreak in 1903, when the cases were removed to the Basford Hospital on or about the 6th July, there were six cases within half a mile from the hospital.” Then they are specified. That does not seem to help very much, “at the time of the outbreak.” Do you know when these cases occurred?—They were noted on the 7th July, I think.

C 1057. On the 7th July, had your cases been removed from Newstead to the hospital?—15 days before that my hospital was overcrowded with the cases, and they were acute cases.

D 1058. What is the ordinary period for incubation, if that is the right expression?—12 days, and three days to diagnose the disease, I take it—15 days altogether.

1059. Is that the ground on which you consider that probably these seven cases arose from your hospital?—I think that is highly probable.

E 1060. I think the more relevant evidence I was going to ask you to come to relates to the particular hospital in question—are you quite familiar with the site of it?—Yes.

1061. And with the neighbourhood?—Yes.

F 1062. Is there a considerable working population within half a mile?—Yes, Bestwood village, which is a colliery village, north, and Bulwell south.

1064. And there is also an industrial population there in the day time in the colliery and ironworks, the mills and so forth?—The bone mills and flour mills.

G 1065. Are you familiar with the road in front?—Yes, I have passed over it many times.

1066. Do you pass along to go from the district of which you are head officer down to the hospital—your own hospital?—Yes, and most of my cases come along that road.

H 1067. Then it must be a healthy road. Is it a busy road?—Very busy. It is a favourite bicycling road, and it is the only road from Bulwell—it is the best road from Bulwell to Mansfield.

1068. Is there a good deal of traffic along it?—A fair amount of traffic.

1069. Now, in your opinion, is there any serious risk of infection

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Dr. G. B. Wray.

to persons passing along that road, whether on foot or in vehicles, from the hospital in question—the Nottingham hospital—if there should be an accumulation of acute cases there?—If they were overcrowded and acute I should say there would be a risk.

1070. You say if overcrowded?—Yes. A

1071. Assume, as my friend has put it, 40 cases?—The hospital, I believe, is a 20-bed hospital. If there were 40 cases I should say they were overcrowded.

1072. Have you been inside the hospital?—I was inside when it was building, but not since it has been completed. B

1073. You consider it is only a 20-bed hospital?—That is my idea, judging from the windows and the length and breadth of it.

1074. Do you think if 40 cases were assembled here and a normal proportion of acute cases they would be a source of danger to persons living in the neighbourhood?—From my experience of my own hospital I certainly do. C

1075. Then there are cottages just to the south of it—you know the Moorbridge cottages and the allotment gardens?—Yes, I know those 22 cottages.

1076. And you know Barrow's cottage?—Yes, at the pumping station. D

1077. And then there is a farm opposite—the forge farm, and then the forge mills and the corn mills. Do you know the cottages and Mr. Loweth's house in the neighbourhood of the mills?—Yes.

1078. In your opinion, assuming the 40 cases we have heard of and the normal proportion of acute cases—is there a serious risk to persons dwelling in those houses and cottages that I have referred to?—I think there is a certain risk, but I should rather like to emphasise the fact of acute cases. E

1079. You are an expert gentleman, and just tell my Lord what your view about the matter is?—If half of the cases are acute, and you have six moved in a day for a week or for three days, and the rest are convalescents, in the ordinary course I should say that there was a danger; but if the cases were moved in, say, two a day for 20 days, I should say there would be no danger, or very little danger. G

1080. That depends on how many acute cases are accommodated at the same time?—In the crowded condition, I believe the chief point of the danger depends on the acuteness of the cases.

1081. Perhaps I ought to have asked you this question when I was asking you about the road: a large proportion of the population of the neighbourhood is a colliery population?—Bestwood certainly is a colliery and ironworks population. H

1082. We have heard that a good many colliers live in Bulwell, and go up to the colliery?—Yes, a certain amount.

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1083. Are you familiar with the condition of the colliers when they have been doing their day's work?—Yes; I have been down a pit.

A 1084. And I daresay you have attended a good many colliers in your hospital?—I was a colliery doctor for 10 years.

1085. Then you have had plenty of experience. What do you say as to the susceptibility of a collier going home along this road after a day's work?—They are generally run down and tired.

B 1086. And from the point of view of his likelihood of taking the disease?—More susceptible going from work than in the morning going to work.

1087. And you think that is a substantial danger to that part of the public?—Yes, certainly.

C 1088. Supposing he was going along the road and he should see a man inside the ground—say in the desquamation stage—and he stopped for a chat, do you think there would be a risk then?—There would be a remote one.

D 1089. I think you are moving your hospital, are you not?—No, our hospital is an infectious diseases hospital. That has been on two occasions temporarily used for small-pox. We are trying to get a small-pox hospital.

1090. Some little way out in the country?—Yes.

Cross-examined by Mr. MACMORRAN.

E 1091. Have you had any experience of small-pox except in your own district?—Yes, I have gone to see small-pox cases.

1092. I mean as a medical officer of health?—Not as a medical officer of health, but I have gone for my own instruction to see some small-pox cases in other districts.

1093. To see cases of small-pox?—To see cases of small-pox.

F 1094. But have you had any experience of small-pox save in your own district?—None whatever.

1095. Have you had any serious outbreak of small-pox in your own district?—Only one.

1096. When was that?—In June last year.

G 1097. How many cases did you have?—Forty-eight.

1098. This hospital that you are using, or were using then—is it within the city of Nottingham?—Yes, about 50 feet inside the boundary.

H 1099. It is nearer the centre of Nottingham than this hospital in question?—About $1\frac{1}{2}$ or 2 miles.

1100. Just look at this map (handing same), just see whether

- February 11, 1904 the site of the hospital is not marked there. It is marked on that
— “Basford District Council’s Sanatorium” ?—Yes.
- Dr. G. B. Wray. 1101. Mr. MACMORRAN ; Would you hand that to my Lord.
(Same handed to his Lordship.) It is something like two miles nearer
the heart of Nottingham than the hospital in question ?—I have just A
admitted that.
1102. I think it was built on land belonging to the Corporation ?
—No.
1103. It closely adjoins two lines of railway ?—Three.
1104. And it also adjoins the main road ?—You would hardly B
call it the main road if you walked along it.
1105. It is the same road as that which goes past the other you
know ?—Well hardly.
1106. It is the same road, is it not—I mean it is a continuation
of the same road ?—The road I am on is the Hucknall road. The C
other one is on the Bulwell road.
1107. Oh no, it is the same road. The road goes alongside and
parallel to the railway past the hospital ?—Yes, it joins the other.
1108. And your hospital grounds are separated from the high
road by a corrugated iron fence ?—No. D
1109. By what then ?—By a brick wall.
1110. What height ?—About 10 feet
1112. What is the fence round the rest ?—Of corrugated iron.
1113. How high ?—7 feet 6 inches.
1114. Are you sure ?—I cannot say to an inch, but that was the E
specification—the height was put 7 feet 6 inches.
1115. I will take it from you if you say so, but my opinion
is different, for so far as the road is concerned your hospital is open
to just the same objection as the one in question is ?—I do not think
so, because my small-pox wards are about 70 yards away from the F
road.
1116. I will take that distinction. I should say it is quite 70
yards, if not more.
1117. Will you tell my Lord what population you have there
within the quarter of a mile ?—I have not counted them, but I am G
ready to admit that it is over 200 and the other is over 600.
1118. But a good deal more ?—Yes.
1119. The workhouse is within the half-mile radius ?—I am
doubtful about that—a part of it is.
1120. And that has a population of 1,000 of itself, has it not ?— H
I don’t know. It is about 1,500 I think.
1121. Had you anything to do with the selection of that site ?—
For infectious diseases do you mean ?
1122. You had something to do with the sending of small-pox
patients, I suppose ?—Yes. I

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1123. Did you think that place was suitable for small-pox patients, having regard to all these facts?—Yes, at the time I did.

A 1124. And I think on the same site you treated fever patients in a separate building, of course, and some small-pox patients or you have done so?—I should like to qualify that. On the one side I admitted small-pox, and I re-vaccinated those that were not vaccinated, and those that did not consent to that I sent out.

1125. You have it on the same site?—Yes, two diseases going on at the same time, and two establishments of nurses.

B 1126. That, I suppose, is also contrary to the Local Government Board's regulations?—I do not think it is. I think that I have obeyed the Local Government Board's regulations since I took the small-pox in by not admitting any more.

C 1127. But the Local Government Board does not say anything about not admitting any more. It says, "even where the above conditions are fulfilled a hospital must not be used at one and the same time for the reception of cases of small-pox and any other classes of disease"?—Yes, I broke the regulation as soon as I met with the first case of small-pox.

D 1128. So that it would seem that your own hospital has broken the regulations of the Local Government Board?—As regards small-pox.

E 1129. Just see if you can contradict this. I am told that within a quarter of a mile of your own hospital there is a population of 770 and within the half-mile radius a population of 2,553?—Those are about the figures I guessed at.

1130. How many cases of small-pox have you had in that hospital at one time?—38 was the largest number at one time.

F 1131. And how many of those were acute?—They were all admitted within 23 days, so that at least two-thirds of them were acute.

1132. According to the evidence you have given to-day, that hospital must have been a terrible source of danger to the locality?—It was so terrible that certain cases spread from it.

G 1133. You made an affidavit in this action, did not you?—Yes.

1134. You say there were 48 cases, some of them of the most malignant type?—That is absolutely correct.

H 1135. And two-thirds of the cases that you mentioned as being in the hospital at one time were acute?—I do not say how many were acute because I do not know.

1136. You gave me the figures; it is not mine?—You asked me the largest number at one time in the hospital, and I told you 38.

1137. And you said that two-thirds were acute?—About that, because they were all admitted within 3 weeks.

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1138. According to your evidence that must have been a terrible source of danger to the locality?—Yes.

1139. But notwithstanding the danger to the locality, you continued to take your patients there?—I only took two after that.

1140. You took 48 altogether?—Yes, but mind when there were 38, some had been in and gone out. A

1141. I think you said there were only two admitted afterwards, but that was because you had no more to take?—Yes, I had no more to take after the 21st June, except the two in July.

1142. If you had more, you would have been obliged to have taken them in?—I would have been bound to, because I had no other place to put them. B

1143. You told me there were six cases in the immediate neighbourhood of the hospital?—I heard there were.

1144. You did not know it yourself?—No, I did not attend them. I know nothing about them except that I heard from the doctor who attended that there were these six or seven. C

1145. Did you investigate into the cases to ascertain whether they had been infected from other sources than the hospital?—No. I thought that would be done by the city medical officer of health. D

1146. Do you know that it has been done?—No, I have no idea.

1147. And do you know that in every case contact has been traced?—No, I do not know that.

1148. Supposing it had been proved would it alter your opinion as to the danger from this hospital?—I do not think it would. E

1149. You think not?—No, I still hold the same opinion.

1150. Then you do not base your opinion which you have given to my Lord on any facts connected with this hospital yourself?—Yes, I based my opinion on this that I had my hospital overcrowded with acute cases. F

1151. I am asking you to assume because we are going to prove it that all those cases can be accounted for and otherwise than by the hospital. If that is so on what do you base your opinion with reference to the dangers from the hospital?—I will not assume it—it is very easy to talk about contact but you cannot trace contact. G

1152. I am asking you to assume it?—Then you are asking me to assume an opinion.

1153. No. I am going to ask you to assume facts which will be hereafter proved in evidence. Supposing that all these six cases can be accounted for otherwise than by the presence of the hospital, on what do you found your opinion that the hospital is dangerous?—Simply on the fact, as I learnt it, that those cases occurred on the H

same day and 15 days after I thought my hospital began to be a source of danger to the neighbourhood. February 11, 1904

1154. It is a case of post hoc propter hoc—You did not make any investigation at all?—I did not make any investigation beyond my own circle. Dr. G. B. Wray.

1155. That is the only evidence you possess, I understand, on which you base any opinion at all?—That is the only evidence—personal evidence and my practical experience.

(Adjourned for a short time.)

B 1156. Mr. MACMORRAN : I only want to ask you one question. I think, speaking of the 48 cases, they can be described as one case, could they not?—No, they come from three different parishes.

1157. I understand it was all one case?—No, they came from three different parishes.

C 1158. Then they spring from three cases?—Yes, three different parishes.

1159. As regards one of them, at least, was that due to an error in diagnosing it?—It was.

D 1160. How many cases have you following from that?—Something about 43, I think.

1161. Is it not the fact that an undetected case of small-pox would explain a good many cases of aerial communication?—What do you mean by aerial communication? In the case of an undetected case of small-pox, I say that would be contact.

E 1162. When you have no reason to believe small-pox exists, and you find a large number of cases arising from an undetected case, does not that explain it?—It explains it by contact, but not by aerial communication.

F 1163. With regard to the cases at the hospital, I suppose the same causes had been at work?—Probably; I do not know.

Re-examined by Mr. UPJOHN.

1164. I was not aware your hospital was in the city. Is that a small-pox hospital?—No, it is an infectious hospital.

G 1165. When was it first used as a small-pox hospital?—On the 30th May last year.

1166. Why did you use it as a small-pox hospital then?—Because I had no other means of isolating the district.

1167. It was under some pressure?—Yes.

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1168. I suppose when a local authority is pressed with a small-pox epidemic there is a great temptation to do this?—Yes.

1169. On the 30th May last year how long was it used as a small-pox hospital?—I think the last case went in August.

1170. In the following August?—Yes. A

1171. Was it early in August or late in August, do you remember?—There is a book there which will tell you the date if you will give it to me. (Book handed.) The 28th August, and some patients had been in there 73 days.

1172. That was three months—June, July, and August? B
—Yes.

1173. Is 48 the total number of cases dealt with in the aggregate?—Yes, in that time.

1174. How many at a time were there?—Well, on the 30th May there were only three. C

1175. What was the greatest number at a time?—The greatest number at a time was 38, I believe. That was the 21st or 22nd of June.

1176. How long did it remain at that figure?—For about seven days. D

1177. Of those 38 how many were acute?—I could not say exactly, but I should say two-thirds. I can tell you the admissions the week before.

1178. We do not want to investigate all the cases too closely; if you think two-thirds is about right, that will do?—There were 17 admitted the week before the 21st, so I should say those 17 at least would be acute. E

1179. What was the date, you did not give it to me before?—The 7th of July was the date of the notification of those cases.

1180. What is your area of land that is held by the hospital?— F
 $6\frac{1}{2}$ acres.

Mr. UPJOHN : My Lord, I mentioned to your Lordship that I desired to call one or two gentlemen from the Local Government Board, but after hearing me mention that, they both spoke to me as I was going out of Court, and informed me that it is creating a great deal of unpleasantness at the Local Government Board. The gentlemen were subpoenaed, but they have had strict injunctions not to answer any questions of opinion, and the case mostly is, as your Lordship knows, one of opinion. They say unless the Court asks for each question to be answered, which means G
a very long examination, of course, they ought not to answer. It is quite true they said they would not give proofs, but we said that was because they did not want to appear to take any part in the matter. H

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We had no idea we were offending the Local Government Board. I do not want to do anything which is at all distasteful to the gentlemen in the office of the Local Government Board. There is a letter from the Local Government Board to the defendant Corporation, or, I suppose, to the chief clerk, I do not know the exact way in which it is addressed. If my friend will agree, I am willing to read that letter and treat it as the proof of Dr. Fletcher, the inspector who visited the hospital and made a report upon it.

Mr. MACMORRAN : What is the letter ?

Mr. UPJOHN : It is a letter, my Lord, dated the 19th of June

Mr. MACMORRAN : I do not know about my objecting to your reading that. I am afraid I must. The question is that I shall want to cross-examine.

Mr. UPJOHN : Then, that being so, I think I ought to call the gentleman who inspected the hospital, and I must confine myself to matters of fact. If he is not willing to give an opinion, of course I do not desire to press him. We do not desire to do anything that is unpleasant. Dr. Fletcher has asked me to bring to the notice of the Court that that is the position he takes up under the directions of the Local Government Board, and, of course, I have done so.

Dr. JOSEPH WILFRED WILLIAM ROBERT FLETCHER,
Sworn.

Dr. J. W. W. R.
Fletcher.

The WITNESS : My Lord, before answering any questions, may I ask your permission to read the instructions which the Local Government Board have given me, and to hand a copy in to your Lordship afterwards ?

Mr. Justice FARWELL : Yes, let me see them.

The WITNESS : I do not know whether your Lordship would prefer that I should read them, or whether I should hand them to you now ?

Mr. Justice FARWELL : You may as well read them to me, and then give them to the shorthand writer.

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Dr. J. W. W. R.
Fletcher.

The WITNESS : “ Local Government Board, Whitehall, S.W.,
11th February, 1904.—Sir, I am directed by the Local Government
Board to furnish the following instructions for your guidance when
attending upon subpœna to give evidence in proceedings before the
High Court in the case of Attorney-General and others against the
Mayor, Aldermen and Citizens of the city of Nottingham :— 1. You
should claim, subject to the directions of the Court, to confine your
evidence to statements of actual fact, and to refuse to answer ques-
tions directed to eliciting your opinion upon any of the points
involved. 2. You should claim, subject to the direction of the
Court, that your report is a privileged document, and that it was
made solely for the information of the Board in the discharge of their
duties, and you should state that you are instructed by the Board to
object to its production on the ground that such production would be
prejudicial and injurious to the public service of His Majesty.” Then
in addition to that there is a letter from the President of the Local
Government Board :—

“ With regard to the subpœna duces tecum served by the
plaintiff’s solicitors on Dr. W. W. E. Fletcher, one of the medical
inspectors of the Local Government Board, that in the proceedings
taken by the plaintiffs against the Mayor, Aldermen and Citizens of
the city of Nottingham, the report made to the Local Government
Board by Dr. Fletcher on his inspection of the small-pox hospital and
site at Bestwood, Notts, in or about June, 1903, should be produced,
I direct that it be represented to the Court that I object to the pro-
duction of the report on the ground that its production would be
injurious to the service of His Majesty.

WALTER LONG,

President of the Local
Government Board.

I may say the Local Government Board have furnished me with type-
written copies of these to hand to your Lordship.

Mr. Justice FARWELL : I do not see why those instructions
should be prejudicial to any case being heard here.

The WITNESS : The only thing is this, my Lord, we are accus-
tomed to visit all parts of the country and confer with the different
sanitary authorities, and they generally give us full information as to
the different things concerning their districts, and those statements,
of course, are given to us in confidence, and if it were known to be
the practice that we are to be called and give evidence, and very
likely divulge their confidence, it would be hardly likely they would
feel inclined to repose their confidence in us again.

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Mr. Justice FARWELL : That may be all very well, but, on the other hand, I have to ascertain whether this is dangerous to public health or not, and I think that I should be assisted by the representatives of the Local Government Board, who are sent to make out the reports. I cannot conceive why they should not be given. Mr. Asquith, is this a usual objection?

Mr. ASQUITH : Yes, my Lord, I think so : at any rate, the Local Government Board authorise it.

Mr. Justice FARWELL : I do not quite see how I can get out of it, but it is really very awkward.

Mr. UPJOHN : So it is for the plaintiffs, my Lord.

Mr. Justice FARWELL : The objection goes to matters of opinion, and therefore I suppose you will not ask Dr. Fletcher on matters of opinion, but you want to put in his report as a record. You cannot put it in. I suppose you can ask him any questions of fact?

Mr. UPJOHN : It is so difficult. The fact is, he will want to be cross-examined, and of course we want his opinion as an expert of the hospital site.

Mr. Justice FARWELL : I suppose if the Board object to their stating their opinion about it, I cannot compel them to.

The WITNESS : They do not like the idea of our being called as witnesses.

Mr. Justice FARWELL : I quite follow that, but the fact remains that, whatever the reason may be, I am not permitted to know what your opinion is.

The WITNESS : The Local Government Board have type-written copies of the report, and there are other matters as well as matters referring to the hospitals in it. The original report contains confidential matters relating to the staff of the Board, so there are several things that cannot be dealt with separately from the hospitals.

Mr. Justice FARWELL : I cannot instruct the Local Govern-

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ment Board. If they say it is detrimental to the public service I must abide by it, but I must confess I should like to have had the opinion, but after that I cannot compel them. I suppose you would object to my communicating with the President of the Local Government Board as to my seeing it confidentially, because, of course, you want to cross-examine upon it, Mr. Asquith. A

Mr. ASQUITH : Yes, but the objection must not proceed from us. If it is put in I want to cross-examine upon it.

Mr. Justice FARWELL : I cannot ask to have it put in after what has been said, but I certainly protest against it. B

Mr. ASQUITH : I have never seen it.

Mr. UPJOHN : It will come up sooner or later, because I shall put it to the town clerk or other representative of the Corporation as soon as he comes into the box. I shall put it that he has written a letter which I suggested to my friend Mr. Macmorran just now might have avoided all this unpleasantness. It might be treated as this gentleman's proof, or his evidence. They have given us notice to admit it. C

Mr. Justice FARWELL : I do not think I can possibly put pressure on this gentleman in view of what he has said, but I respectfully protest that it is rather hard that ~~it~~ should be ~~deemed~~ a sight of the documents by the gentleman in charge of them, and that I should not be allowed to know what their own report is, and what their opinion is. D
denied

Mr. ASQUITH : Of course the Local Government Board have no jurisdiction in this matter at all, unless you apply for a loan. They have no power over the actual local authority. E

Mr. Justice FARWELL : They seem to have made a report.

Mr. ASQUITH : Yes, my Lord, they did. I do not say they were acting officiously, but they have no statutory authority, unless there is an application for a loan. I can well conceive circumstances of that kind where they were acting in accordance with their statutory duty, but this is merely to inform themselves as to the condition of things in a certain place. They might, of course, think F

that the frankness of the Board would be discouraged if these things were afterwards disclosed. February 11, 1904

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A Mr. UPJOHN : Is it not the fact that a question was asked in the House of Commons of the President of the Board as to the hospital ?

Mr. Justice FARWELL : So far as it is between relators and a corporation, I agree, but I protest that I am not to have all the best material that is available for me.

B Mr. ASQUITH : Of course, my Lord, I do not hold any brief for the Local Government Board in the matter.

Mr. Justice FARWELL : No, of course not, only I rather appeal to your experience.

C Mr. UPJOHN : This being so, my Lord, I do not see any use in asking Dr. Fletcher any questions. My Lord, Dr. Chalmers speaks as to a Glasgow experience, and I propose to ask him only as to one outbreak there.

D DR. ARCHIBALD KERR CHALMERS, Sworn.

Dr.
A. K. Chalmers.

Examined by Mr. UPJOHN.

E 1181. I think you are the Medical Officer of Health of Glasgow ?
—Yes, I am.

1182. You were appointed as the junior or assistant medical officer in 1892, and when your senior colleague became the medical member of the Local Government Board of Scotland you succeeded him in 1898 ?—Yes.

F 1183. Since then you have been the head medical officer of Glasgow ?—Yes.

1184. I think there was an outbreak of small-pox in Glasgow, which commenced in April, 1900, and continued to 1901 ?—June, 1901. Yes.

G 1185. And there was a sort of recrudescence in the following

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- November, which lasted until May or June, 1901?—Yes, the middle of 1902.
1186. Tell me in what part of the city is the hospital situate?—The hospital is situate towards the eastern part of the city, on the eastern boundary. A
1187. I think you have made a special report to the Corporation upon this?—That is so.
1188. Will you be good enough to take a copy of this?—My Lord, the position of the hospital is shown on the first map. It is shown on every map, I think. Does your Lordship see a cross on the right-hand side towards the bottom corner? B
1189. Is that the site of the hospital?—That represents the site of the hospital.
1190. Where did the first case occur in April, 1900?—I put a circle in black on that map representing the site, and on several of the subsequent cases. C
1191. Is that the dark circle that one sees near the figure 12?—Yes, near the figure 11.
1192. It occurred there?—Yes, this represents the site where the cases occurred during that fortnight. If you refer to the index you will find that represents this case in April. D
1193. I am not going to ask you about this in great detail. Can you tell me, taking the period down to the 2nd of June—I think that is the end of your fortnight—how many cases had been registered?—On the table, at page 7, you will find up to that time we had two. E
1194. I dare say my friend will not object to our looking at the book in order to explain the table. I ought to ask this question. I think you divided the periods of the epidemic into three?—Roughly I did in this report, yes. F
1195. May I take it what is called the pre-epidemic period?—That represents the cases occurring from the beginning of the prevalence down to the end of 1900, and then the cases occurring in 1901 until it ceased in the summer altogether. That I called the epidemic period; then carried to the following winter; and then from November to the following June. G
1196. Then we find Tables 1, 2, and 3 at pages 7 and 8 of your report?—Representing the number.
1197. Those are correct, are they?—They are correct subject to a slight reduction in the numbers due to correction that I noted afterwards—a smaller number, but that does not affect it. H
1198. Your Attack Rates have all been corrected, I think?—Yes, the Attack Rates have.
1199. It is only a question of a small inclusion?—Yes.

1200. The first case happened in the fortnight ending of the 21st of April?—In 1900, yes. February 11, 1904

1201. In that fortnight you discovered nine altogether?—Nine altogether.

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A 1202. Probably they had been infected by the first one?—Many of them were, but this was not known of till some time after.

1203. Down to the end of the fortnight ending the 2nd of June there had been registered 72 cases?—72.

B 1204. That one sees in the column headed "Whole city?"—The whole city.

1205. In order to save doing a little addition just tell me if this is correct: Out of those 72 cases 33 will be found in the column headed "Central" and 18 in the next column headed "Eastern?"—That is so. It is just at the beginning of the paragraph, page 6 of the report. You will find the numbers and: "A large proportion of the cases had occurred in the central district in which the disease began."

C 1206. This report was written by you?—It was.

1207. It is dated when?—Just at the end of the third period.

D 1208. And it was the agreed report with the actual figures before you?—Yes, it was.

Mr. UPJOHN: Do you mind my reading the passages from the report, Mr. Asquith?

Mr. ASQUITH: Read as much as you like.

E Mr. UPJOHN: On page 6 you say: "So far, a large proportion of the cases had occurred in the Central District, in which the disease began, and until the close of the fortnight, ending 2nd June, of the 72 cases which had been registered, 33 were from the central and 18 from the eastern districts of the city. In the following weeks
F a change in the distribution occurred, accompanied by evidence of increased activity in the propagation of the disease. During the fortnight ending 30th June this district contributed 34 of the 58 cases then recorded."—Those would be new cases. (Q.) Yes, that had come in only within the particular fortnight. "The exaggerated
G incidents in the Eastern District continued to characterise almost all the subsequent fortnights until the disease disappeared in the following summer, and it again became a feature in the development of the recrudescence in the spring of 1902. Although most of the other divisions in turn developed definite, and sometimes repeated foci of
H infection, there occurred in none of them any prevalence at all equal to that presented by the Eastern."

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Mr. Justice FARWELL: Has Mr. Asquith had this report before, or does he see it for the first time now?

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Mr. ASQUITH: No, my Lord. I am looking at it for the first time now.

Mr. Justice FARWELL: Otherwise I was going to say he might be asked a general question without reading it all through, because if I am going to have 70 or 80 pages of print I shall have enough to do. I understand it is his report, and he prepared it. If he says it is correct according to his opinion, is not that enough. **A**

Mr. ASQUITH: I may be right or wrong; but as far as it is relevant to any question here, as far as I can make out the conclusion come to by this gentleman is, that in the eastern district of Glasgow there was an unusually large incidence; that is, I think, the effect of the report. **B**

1209. Mr. UPJOHN: Yes, that is the result of the passages I was going to put to him. That, as we have seen, was not until the fortnight beginning the 3rd of June?—Beginning the 3rd of June. **C**

1210. And on the 21st April down to the 3rd of June there was no undue proportion in the eastern division. Perhaps I may put it in this way. This was carefully prepared by you, was it not, with the figures before you, and it is correct, is it not?—It is correct, I believe. **D**

1211. Correct as to the facts, and so far as it expresses matter of opinion, do you say the things are correct?—Yes, the things are perfectly correct. **E**

1212. Mr. Justice FARWELL: And you still hold the same opinion?—And I still hold the same opinion.

1213. Page 25 apparently sums it up?—Yes, my Lord.

1214. Mr. UPJOHN: There are two passages I should like to refer you to at page 25. I should like to draw attention to a passage there which my friend may properly say is not within the witness's knowledge, and he is entitled to say that. It says: "During the epidemic prevalence of the disease early in the seventies." That is before your time?—Before my time. **F**

1215. What you state in this particular paragraph is taken by you from investigations of the records, is it?—That is so. **G**

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1216. Are they the city records and the hospital records?—
Yes.

A 1217. Then, of course, my friend may not make an objection with respect to them. With regard to your own knowledge, the last two paragraphs on that page are within your own knowledge. I think?—The last two paragraphs are within my knowledge.

B 1218. Then at page 27 there is a matter that I want to draw your attention to. The paragraph says: "It is impossible to exclude from this the operation of widely distributed opportunities of infection which we know existed; but a comparison of the proportion of Eastern cases in the several stages of invasion, early activity, decrease, and subsequent epidemic prevalence of the disease, shows that a general correspondence existed, not so much with the accumulated numbers under treatment, as with the fluctuations in the number of admissions, although even here the parallel breaks down when applied to the early period of the epidemic disease." That is correct, is it?—Yes, that definitely expresses what I have held in the matter.

1219. That is your opinion now?—Yes, it is.

D 1220. Then about the middle of page 22: "It would appear, therefore, to be a not unwarrantable deduction that the risk of aggregation begins at a very early period, and tends to foster a prevalence of the disease in the neighbourhood of small-pox hospitals; but that when epidemic virulence is established, the precise influence exerted by the hospital cannot be dissociated from that caused by the independent centres which it has in part established." That also represents your opinion, does it?—Yes.

1221. This is not the only case you are generalising from?—Well, with special application to things within my own knowledge.

F 1222. You are familiar with the reports generally of the Local Government Board relating to other cases: for instance, the Fulham case, the Sheffield case, and so forth, that have been already mentioned to my Lord?—Yes, in a general way I am. Only from perusal. I have had no opportunity of inquiring into them.

G 1223. I agree they are not within your own knowledge. Partly based on the information you have acquired from reading these reports, and partly based on your own Glasgow experience, in your opinion is a small-pox hospital which is situate at a distance of 50 feet only from a road along which there is a fair amount of traffic, both on foot and in carts, a source of danger to the public using that road?—I think it becomes a source of risk wherever it is situated to the population living near it.

I 1224. No doubt, but assuming there were, say, 40 cases connected with the hospital—I am putting to you the case of the Nottingham Hospital with the usual proportion of acute cases—in

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your opinion, is there a risk of infection to persons passing along the highroad at a distance of 50 feet from the hospital building?—Not quite so definite as to persons who are living in the area.

1225. Then take the persons who are living in cottages.

Mr. Justice FARWELL: Is that an appreciable risk? (A) I think there must be even to a person passing by. The strength of the risk depends, of course, on the exposure to it.

1226. Mr. UPJOHN: The frontage of the hospital grounds to the road is 1,000 feet?—In Nottingham? Yes.

1227. In your opinion, does that enable you to say whether there would be a substantial risk to persons using the highway?—In cases nearer town it was suggested that many of those living beyond the boundary had obtained infection from passing the hospital, but whether that represented the actual facts I am not prepared to say.

1228. It was alleged?—It was suggested at the time.

1229. Assuming still a hospital of 40 beds. I put that because my friend says that is the hypothesis. You know what happened with Dr. Ray, and what he got in under a little pressure, but assuming 40 beds, in your opinion is there any appreciable risk to persons living within a radius of a quarter of a mile?—Would you allow me to answer the question in another way. May I refer to a table at page 25. You refer to the years 1892 and 1894. There was not in either of those years a very large number of cases in Glasgow, and yet the proportion of eastern cases in both years was in excess.

1330. It was 23 per cent. of the population?—28 in one case and 32 in another, but my suggestion is that in neither of the years would there be at any one time anything approaching 40, because one year, 1894, the total number was only 49, and in 1892 the total number was 78, and in those years we had more than the population warranted.

Mr. UPJOHN: Yes, I think it did want that explanation.

1231. Mr. Justice FARWELL: What inference do you draw from that?—That a small-pox hospital is always a source of danger.

1232. I think in this book there is a table showing the proportions between the different zones—the quarter, half and three-quarters?—Quarter, half, whole mile, and mile and a quarter. You will find that on the map with the zone round it.

1233. Do I find the figures in your report showing the intensity of each zone?—No, it was calculated as percentage within the zone, but it represents it in districts. If you will be good enough to turn

to page 24 you will find each of the stations grouped and the attack rate per 1,000 of population there. February 11, 1904

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1234. Yes, but you have not got separate figures for each of those special zones?—Not for the zones, oh no, but 7 and 8 and 5, which you will see called the eastern division, have the case rate per million, and the districts are marked again by this thin red line on the map. It was 9,970 per million in district 7, which you will see represents the district where the hospital is. 6,463 were the figures for the adjoining district of Barrowfield, and 2,828 at Bellgrove and Dennistoun, which is district 5, a large portion of which is at a good distance from the hospital. Over the whole period it is 2,309. There is only one, I think, with a larger rate than 2.

1235. In your opinion the hospital had that effect, although in some years—in 1892, 1894 and 1897—there must have been a good many less than 40 people there at a time?—Oh, yes, especially in those districts where the total number did not exceed 50.

1236. Does that enable you to answer the question as to whether this hospital at Nottingham, with an assumed capacity of 40 beds, and assuming that they are all occupied with the normal number of acute cases, would be a substantial source of danger to the inhabitants of houses and cottages within, say, a quarter of a mile?—It would be apparently extended to a greater distance than a quarter of a mile. We felt it a mile and a mile and a quarter.

1237. Do you mind listening to my question, and answering it? In your opinion is there a substantial risk to persons who are dwelling within a quarter of a mile?—Oh, yes.

1238. And some distinction has been attempted to be made between persons who live there and persons who only go there in the daytime to work. Is there a substantial risk to people who are living there, or only working there?—I take it there is a definite risk to everyone within the zone.

1239. What do you say about the half-mile zone?—It is still shown in our experience to be within the area.

1240. You think there is some risk within the half mile?—Yes, I do. Mind, I refer to the position of District 8. There in the map you will find the circle that goes through it is a mile distant from the hospital. Now, almost half, and probably more of that district is west of that land which is a mile, and the attack area in the year was 6,463 per million.

1241. That is three times the average?—Three times the average almost.

1242. Although the greater part of it was beyond the mile?—Yes.

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Cross-examined by Mr. ASQUITH.

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1243. I understand this report of yours, and the inferences in it are based entirely upon your experience in Glasgow?—Yes, on the epidemic period there.

1244. It is the only one, I think you said, of which you have a personal experience?—It is the only one of this size, but I belong to a hospital in Glasgow. **A**

1245. How long did this epidemic last?—It began in April, 1900, and then went on continually to about June, 1901. Then there was an interval of 3 or 4 months till November, and it began again in November, and went on until the summer of the following year, 1902. **B**

1246. About 2 years?—Roughly, 2 years, with an interval.

1247. On page 8, the second table, which is the table of the epidemic period, in the last column of the table, there is shown how many were in the hospital?—Yes, on a particular day at the end of the fortnight. **C**

1248. I suppose this would be fairly the average for the fortnight?—Oh, yes.

1249. I see from the 6th January, until the 6th of April, your numbers vary between 200 and 400?—I think during that time it would be probably over 200 considerably, and nearly always over 300. **D**

1250. As a rule over 300, and in some cases nearly 400?—Yes.

1251. Those were all aggregated in this hospital incidence?—In the hospital, yes. **E**

1252. What proportion of acute cases would there be, roughly?—It would vary. You see a very large proportion would be acute.

1253. I suppose subsequently it mitigated in character?—Yes, as the number of admissions fell off the proportion of acute cases is diminished. **F**

1254. That is in 1901?—1901, yes.

1255. Have you the corresponding table for 1902?—That is in Table 3.

1256. That is the recrudescence of the epidemic?—Yes. **G**

1257. Then I see in the months of February, March and April you have from 100 to 200 in the hospital?—Yes, it exceeded 300 in March.

1258. Did you notice any difference in what you believed to be the effect of the hospital upon the surrounding districts in 1902 as compared with 1901?—We had this eastern disturbance again. **H**

1259. I will put plainly what I mean. Did it seem to bear any proportion to the number of cases in the hospital?—To the two

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springs ; I do not think so because the second period of recrudescence at this period of 1903 was a period which was subject to a very large vaccination movement, so the population was not quite comparable, but it was comparable as regards many other things. It was a better

A protected population.

1260. When the epidemic broke out what was the condition of the eastern district as regards vaccination ?—Largely one of infantile protection only.

1261. Whereabouts at Glasgow is this ?—Bridgeton, further east.

B It is the Bridgeton division.

1262. It is a working-class population, is it not ?—It is a working class population.

1263. Mostly old houses, are they not—tenement houses ?—Tenement houses, yes.

C 1264. It is rather a crowded place, not very well to do ?—It is an artisan population.

1265. Where do they work mostly ?—They work in factories there.

D 1266. It is where the docks are ?—Yes ; but the dock part of the population does not live there.

1267. That is lower down the river ?—That is lower down the river.

1268. That is a factory part ?—Yes, that is a factory part of the river, and those who work in collieries outside and live there.

E 1269. A little congested, is it not ?—No, I was looking for the table here.

1270. How does it compare with the rest of Glasgow ?—I can state the death-rate by way of comparison

F 1271. That is not always a comparison, but it may be. This is apart from small-pox ?—Yes, if you refer to page 30, the death-rate per 1,000 from all causes was stated, and then the small-pox was calculated at 10·8. Here there was a death-rate of 22.

1272. And Barrowfield 25 ?—Yes.

1273. That is part of the district. That is part of the three ?—

G Five, seven, and eight, that is the eastern division.

1274. This shows there is some parts as high ?—And the death-rate is smaller ; it was with the view of comparing it.

Mr. UPJOHN : And the death-rate smaller.

H 1275. Mr. ASQUITH : There is no suggestion that these figures are not correct. It was with the view of comparing the actual sanitary condition. I can give you the actual figures. You told me

- February 11, 1904 a few moments ago the vaccination was very irregular?—It was very much increased in the epidemic in 1891.
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- Dr. 1276. Can you tell me the population within a quarter of a mile and half a mile radii?—I am afraid I could not state it within the radii. I have marked it here. In each of the districts I have stated it. **A**
- A. K. Chalmers. 1277. I want to know within the radii but you cannot tell me that, I suppose?—No, it would require a special census.
1278. Is it not thicker near the hospital?—You will find indications in the map of places which were unbuilt when this map was prepared. There is an interval and then they are under the hospital again, that is on the west and the same away on the north. There are populations pulling up these places again. **B**
1279. District 7 as compared with district 8 is the more populous?—Yes, it is a larger district. **C**
1280. Over twice as large?—In size and acreage, yes.
1281. And population?—In population it is 66,000 as against 27,000.
1282. You cannot give me the figures between the different radii, I think?—No, I cannot do that. I tried at the time the question was discussed, and I thought it was impossible without taking the census figures. **D**
1283. Did you in the course of your investigations come across a number of cases or traces of cases which had not been recognised as small-pox in the first instance?—Yes, I think it is a common feature in every occurrence of small-pox. **E**
1284. That is really a most direct source of infection?—Of direct infection?
1285. Yes?—I think it is common, more or less, to the whole city. If that were the only thing we should probably have expected an attack of equal intensity in each place. **F**
1286. Subject, of course, to the conditions under which the population were living?—To some extent; but to refer to this table on this page here, if one had depended on that alone that is a district where there should have been an enormous attack, I take it. **G**
1287. Which table?—In this table where you compare the general death-rate with the attack death rate.
1288. There is a great deal that is capricious in the spread of small-pox, I suppose. You agree that it is a very capricious thing?—I believe it is apparently capricious, at any rate. **H**
1289. Does your experience of this epidemic enable you to form or express any opinion as to the effect of a number of cases in the hospital upon the chances of conveying the disease? I am told that there is something about it in your paper?—There is a table there on pages 25 and 27. **I**

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1290. I wanted to know why you had formed an opinion, say, with regard to an hospital of 200 patients in it suffering more or less acutely from this disease. Is it a potential fact as a source of infection as compared with an hospital with 30 or 40 patients—have you any opinion on that point?—I think if you have your numbers rapidly accumulating, with a rising epidemic, you might have a greater epidemic than with a greater number gathered later on. The effect does not seem to be cumulative.

1291. That seems to be because the disease has diminished in virulence?—Because there is a gradually increased amount of convalescence.

1292. That is one of the obscure corners of the subject?—Yes.

1293. The whole question is highly speculative. How does small-pox spread, and what makes it spread more in one place than another?—How it spreads is arrived at probably speculatively, but that it does spread in connection with an hospital is, I think, a well ascertained fact.

1294. You have formed your experience on those cases?—Yes, those amongst many I have read of,

1295. When was the hospital put there?—I think the small-pox hospital was opened in 1877, or it may be a year or so after that.

1296. When did you first go there yourself?—I was resident in this hospital in 1879, and was associated with the administration.

1297. Was it already affecting the eastern district then?—In 1879.

1298. Yes?—That was the downward part of the cycle when there were not many cases.

1299. But pro tanto in your view I should have thought however many or however few cases there were it would have a certain effect?—It may have had, but I am not in a position to tell you what it was in actual numbers because I had not got them.

1300. You had not the facts?—I had no facts at my command at the moment.

1301. Has any attempt been made to remove the hospital to a different site?—Yes, there has been.

1302. Has that been done?—The site has been approved of.

1303. Are you still going on with this hospital?—We must at this moment, we have nothing else. I mean the health committee were so impressed with the undesirability of continuing this that they selected another site.

1304. Where is the site?—Right outside Glasgow.

1305. But where?—Might I ask, do you know Rob Royston neighbourhood?

1306. I do not?—It is to the north-east.

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1307. How many miles?—Three and a-half miles from the Exchange, and the distance between the boundary and that particular part of Glasgow, which is very sparsely populated, and the nearest part of the hospital site boundary would be rather less than a mile. A

1308. From the city boundary?—From the city boundary on that side.

1309. Is it to serve the whole of Glasgow?—To serve the whole of Glasgow.

1310. How many people are going to be aggregated there?—If we had a corresponding experience after a number of years, we should have probably 500 or 600 people. B

1311. And they can be taken through the streets to Glasgow in ambulances to this place?—That is the only way meanwhile.

1312. Would that involve any risk?—To the public? C

1313. Yes, to the public?—I have got the impression when the sudden rise in our prevalence began in 1901 that it was associated with the conveyance of traffic towards our hospital, as well as arising from the hospital itself. We brought a number of cases from every part of the place into a particular corner, and in that way one did not avoid a certain risk. D

1314. Have you changed that view?—No, I still hold it, and I attribute that as the cause of part of the mischief which happened.

1315. The convergence of this large number of sick people from all quarters?—Yes, of course the experience of 1892 to 1894 shows that it does not require a very large convergence to make small-pox a source of danger. E

1316. What is the degree for the actual passing of the people through the streets?—I have known of children—one or two cases who contracted small-pox because they were standing near the ambulance when people have been put into it. F

1317. And that is the risk you must run when you have a hospital?—Yes, or if you have the alternative.

1318. What is the alternative—you cannot treat these people in their own houses?—I should say that the alternative was compulsory vaccination. G

1319. You have to deal with the conscientious objectors—they are not so common in Scotland, I agree, as in some parts of the world—but apart from that council of perfection, supposing you had an attack of small-pox and you did not deal with the persons affected in their own homes, you must have hospitals for them?—Yes. H

1320. In the public interest it is the lesser of two evils?—I am afraid one must regard as small-pox hospital as being a source of risk anywhere.

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Dr.

A. K. Chalmers.

1321. But it is a less risk on the whole to the public health to have a small-pox hospital than to deal with people in their own homes?—Much less.

A 1322. I suppose you would agree in this, that in a well-managed hospital with proper sanitary receptive arrangements, and so forth, whatever risk is due to aggregation is reduced to a minimum?—I think it is so far as we understand it; it is reduced to a minimum for the present.

B 1323. I mean it is very much less than it used to be in the days when nursing and all these sanitary precautions were less understood?—Yes; I think the tendency of every corporation is to gather every small-pox patient together, and to deal with none at home, and I think that that must tend to the lessening of the number of cases.

Re-examined by Mr. UPJOHN.

C 1324. You say that the necessary risk from a small-pox hospital can be reduced to a minimum. Tell me what area is proposed to be acquired for the new small-pox hospital at Glasgow—what acreage?—The original intention was to devote 54 acres to the hospital, but I think that that will probably be extended.

D 1325. Do I understand that the boundary of the 54 acres is a mile from the city boundary?—Yes, it is almost a mile—seven-eighths, I think. I think I am correct in saying that it is about seven-eighths of a mile from the city boundary.

E 1326. I notice that you reckoned from boundary to boundary?—I believe that is the figure.

F 1327. And that is the right way of calculating your distance, is not it, to take it to the boundary of the premises that are used in connection with the small-pox hospital. You would not take it to the centre of the building itself?—No. I think one would take it to the boundary, probably of the particular part where your patients were gathered, but there is a large outlying ground—at least we intend to have that if possible. I think the point you measure from would be what actually surrounded your wards.

G 1328. Do you consider that you minimise the risk if you put your hospital on a site of 4 acres, with a frontage of 1,000 feet—that is getting on for a quarter of a mile, or, supposing under a quarter of a mile—abutting on a high road where there was a good deal of traffic. Do you call that minimising the risk?—No, I think you are describing very much the condition that we have here.

H 1329. That is a condition there which you are seeking to alter. Small-pox patients, I think, we have already heard travel quite well?—Yes, I mean within a reasonable distance.

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Mr.
W. E. Robinson.

1330. Yes, I mean five or six miles. My friend asked you about the sanitary condition of the three wards that make up the eastern division. If one looks on your two tables on pages 30 and 31 the inference is, is not it, that they are in a better sanitary condition than the other districts which are mentioned in the same tables?—With larger death-rates. A

1331. The death-rate is a good deal lower. I see in Brownfield it goes up to the rather striking figure of 33 per thousand?—That is so; that is our worst.

1332. Whereas in No. 7 it goes down to 22 per thousand?—Yes. B

1333. You have the attack rate of small-pox per thousand 9·9; that is practically 10 in Greenhead, and 2·5—that is $2\frac{1}{2}$ —in Brownfield?—That is so; and there we have probably our most densely populated part of Glasgow, with over 300 people to the acre, I think. C

1334. Where you get a death-rate which exceeds by 50 per cent. that in Greenhead?—Yes.

1335. Yet the attacking rate in Greenhead is four times that in Brownfield?—That is so. D

1336. Without troubling you to go into details and looking at the tables for zymotic and other diseases, page 31, you get just the same inference?—Yes, those tables were constructed with the view to that comparison.

1337. With the view to showing that, no doubt?—Yes. E

1338. Now tell me, are you aware of any factor operating in the eastern division which was not operating in the other divisions except the hospital?—I know of none.

1339. Anything that would account for this difference in the attack rate?—I can think of nothing. F

1340. Then my friend put to you a question as to the accumulative numbers. I think you say that the fact is that it is not the accumulation of numbers which aggravates the attack rate of the district. I see on page 27, paragraph 3, you say that “the correspondence exists not so much with the accumulated numbers under treatment as from the fluctuations in the number of admissions” That of course is not uniform?—Are you quoting from page 27. G

1341. Page 27, the third paragraph?—Yes.

1342. That is right?—Yes, that is right. The impression was that, given an amount of traffic both as to patients and clothing, that is part of your hospital question. H

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Dr. WM. ARNOLD EVANS, sworn.

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Dr. W. A. Evans.

Examined by Mr. UPJOHN.

1343. Are you Medical Officer of Health for the city of Bradford?—I am.
- A 1344. Were you appointed in the year 1891?—Yes, I was.
1345. Have you had a large experience in dealing with outbreaks of small-pox?—I have had a considerable amount.
1346. And more particularly have you had it in connection with the administration of small-pox hospitals?—That is so.
- B 1347. And have you advised not only your own city, the city of Bradford, but other sanitary authorities as to the suitability of sites for hospitals?—I have.
1348. Before asking you about your experience at Bradford, I should like to ask you your own opinion as to sites for hospitals. Now
- C first tell me with regard to placing it in or taking it away from any populous part, is that an important matter to consider?—It is. It is desirable, as far as possible, to locate a small-pox hospital in a district where the population is as sparse as possible.
1349. You are familiar, of course, with the conditions laid down
- D by the Local Government Board for authorities who have to apply to them for their sanction?—Yes, quite so.
1350. In your opinion, are those sufficiently stringent?—In the case of a very small small-pox hospital, I think they might be, but when you came to aggregate a large number of acute cases of small-
- E pox together, I do not think they are sufficiently stringent.
1351. What do you call a large number? It is suggested at this hospital at Nottingham, that they are going to have 40 beds and no more?—I should call that a sufficiently large number.
1352. In such a case as that would, in your opinion, the conditions of the Local Government Board be too lax.
- F 1353. Now with regard to the proximity of the hospital to traffic. What are those figures you are looking at?—My own figures—an extract from my own report.
1354. I am not asking you about your report at present?—That
- G is what I am looking at.
1355. Then do not look at it yet. Now tell me with regard to the remotness or propinquity to a route of traffic what ought to be done?—It is desirable to get it as far away as possible.
1356. I do not think you have inspected the hospital in this
- H case?—No, I have not seen it.
1357. Have you seen any sketch of it?—No, I have not.

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Dr. W. A. Evans.

1358. This is the defendants own map (handed) you see a block coloured red—that is the hospital building, and the red line is the hospital boundary. The whole area is I think exactly four acres.

Mr. ASQUITH : Yes, roughly speaking, it is.

A

Mr. UPJOHN : And there is a frontage ; you see the straight red line to the high road of 1,000 feet—that is about 300 or 400 yards.

Mr. ASQUITH : The frontage is to the grounds and not to the hospital.

B

1358A. Mr. UPJOHN : I think you understand that the red block is the building, but the grounds have that frontage to the road and the building is distant 17 yards—that is 51 feet—from the road in the front. In your opinion is that a proper position for a hospital with regard to the high road ?—No, I think it is too near.

C

1359. In your judgment, would that nearness involve a substantial risk to persons using the highway ?—There is no doubt that there would be some risk, and I think that the longer they remain in the neighbourhood of the hospital and this road the more likely would they be of becoming infected.

D

1360. And to children climbing the fence from curiosity to look over ?—Yes, there would be a danger there, unless they were protected by vaccination.

1361. If you just look down a little lower on the plan you will see some cottages marked Moorbridge cottages. I think there are 22 cottages altogether ; they are just to the south, and there are 99 persons living in those cottages ?—Yes, they are within the quarter-mile zone, are they not ?

E

1362. I will give you the exact distance ; they are 92 yards from the fence and 235 yards—that is about 1-8th of a mile—from the building. Then there are 99 people residing there, and the occupiers of those cottages use the allotment ground that you see between the cottages and the hospital grounds where there is a stream. Now, in your opinion, is there a substantiable risk to the persons dwelling in those cottages ?—Judging from what has happened in Bradford, I am bound to say that I think there is.

F
G

1363. I have no doubt you have read the reports of the Local Government Board on the other cases that have happened ?—Yes, I am quite familiar with them.

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Dr. W. A. Evans.

1364. Fulham and Sheffield?—Yes.

1365. The views you have formed from your experience of Bradford, are they in accordance with the views expressed in those reports?—Yes, the figures in my report quite coincide with those of

A Dr. Power.

1366. So that your experience of Bradford is the same as the experience of Dr. Power and several gentlemen at different places?—Yes.

B —Oh, dear no.

1368. You think there would be a danger at Moorbridge cottages now. Then would you assume that within a quarter of a mile of the hospital building there are 204 people living, some in houses and some in cottages, and then within that quarter of a mile there are also men working at ironworks and other places of business. Now in your opinion is there a substantial risk to those persons?—Yes, I think they would run a risk—those living in the vicinity—in a much greater degree than those only standing a short time there.

D 1369. Do you draw any distinction between those who sleep there and those who only go there to work?—If you spend the whole 24 hours in the vicinity of the hospital you are much more likely to be infected than if you only spent eight hours.

E 1370. When you say “risk,” do you mean a serious risk?—I mean a substantial risk.

1371. What do say about those who live and work within the half-mile radius?—Of course, that risk would not be so great. The further you get from the hospital the less is the risk of your becoming infected.

F 1372. Within the half a mile do you consider that there is a risk?—There was in my experience in Bradford—my figures show that.

G 1373. Now then, I will ask you about your Bradford experience. I think you have detailed all the facts in the paper that you laid before the Public Health Section of the British Medical Association?—I have.

H 1374. I see the first paragraph of your paper is “It is, I think, admitted that the presence of a hospital for the isolation of cases of small-pox is during the period of its operations often attended by an unusual and continued prevalence of disease in its vicinity.” You say that is admitted—is that actually held by all the medical men?—A large number do—those who have had an experience of small-pox hospitals.

1375. Is it your view from your experience?—It is.

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1376. And from what you have read?—It is.

1377. You have given certain tables here—I am afraid you do not give quite the figures that I want?—My figures refer to infected houses and not to cases and population.

1378. Your quadrant is not annexed there?—No, it is expressed in the form of a table. A

1379. Just look at that (diagram handed). Does that show in the form of a diagram the result of your Bradford experience? It does.

Mr. UPJOHN: I should like my Lord to see that (handing B same).

1380. You have taken quarter, half, three-quarters, and one mile. In the quarter-mile zone what is the meaning of the figure 10·4?—That is the percentage of the house invaded by small-pox—10·4 in the quarter-mile radius. C

1381. Then in the half-mile it is 6·1, and then in the three-quarters 2·1, and in the mile you get to 1?—Yes.

1382. It is on page 2 of Table 2, at the foot, your Lordship will see those figures, in the last four columns. In the last column of that table you give the rate per cent. in all the houses in your district?—No, it is omitted there, but you will find it in Table 3, on page 11; it is summarised there. D

1383. That does not tell me in the whole city?—The table will show you that on page 1. The other parts outside the special area, or the whole borough, 1·6; the special area, 3·6; and other parts outside the special area, ·6. E

1384. So that the special area brings up the average of the whole from ·6 to 1·6?—That is so.

1385. Are you aware of any other causes operating within what you call the special area than the existence of the hospital?—No, I do not. There is personal contact, of course, which is common to the whole city. F

1386. But no doubt that is intensified in the hospital quarter?—Yes, quite so.

1387. Because the traffic there converges?—It was the busy part of the town at that time. G

1388. You are not aware of any cause other than the existence of the hospital?—No, nothing otherwise than was common to the rest of the city.

1389. The hospital was under your management, was it?—Not directly. H

1390. But you were there a good deal?—I was there a good deal; we had a resident medical officer.

1391. Was it well managed?—Yes.

1392. And were great precautions taken to prevent actual con- I

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Dr. W. A. Evans.

tact on the part of outsiders with persons infected?—Yes, we took every precaution we could. I do not think that personal contact from the hospitals spreads the disease in any way.

A 1393. Then I think you have a table showing the number of cases in your hospital fortnightly, and the number of cases which occurred in the special area?—Yes, I have.

1394. I think that is the same as Tables 2 and 3?—Yes, practically.

B 1395. Then I will not trouble my Lord with that. I think you were so impressed, and the authorities were so impressed, with the harm that the hospital was doing that you started a new hospital?—We did.

1396. When was that?—That was in July, 1893.

C 1397. That was when the first case was admitted, was it?—Yes, I think that was—it was during the first week of July.

1398. And from July to October two new cases were sent to the new hospital on the other side of the town?—They were.

1399. It was quite away from this district?—Yes.

D 1400. What did you notice then?—We noticed then that the number of cases in that particular district, which I call my special area, diminished.

1401. Was that concurrent with the general diminution of small-pox in the town, or not?—No, there was still a good deal of small-pox in the town.

E 1402. What I mean is, did this old hospital special area simply diminish in accordance with the diminution in the rest of the town or in a greater degree?—No, in a greater degree. We noticed a marked diminution in the cases in the neighbourhood of the old hospital as compared with the rest.

F 1403. Then, I think, you unfortunately had a fire in your new hospital?—Yes, we had that on the 2nd October.

G 1404. And you had to remove the patients to the old hospital?—Yes, we removed a considerable number at that time. I think there were probably about 40 cases in the hospital which was burnt, and we had to remove them to the old hospital.

1405. Was anything specially noticed around your old hospital after that?—Yes, within three weeks there was a recrudescence of the disease around the old hospital.

H 1406. Was that special to the special area or applicable to other parts?—Yes, it was special to the special area, noticeably within the half-mile zone.

1407. I think you then went to work to rebuild the temporary hospital?—We did.

I 1408. When was that opened again?—That was opened in the following December.

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Dr. W. A. Evans.

1409. And after that time were all new cases taken there?—
Yes, after that all new cases were admitted into the new hospital.

1410. Did you notice any special effect on the new area round
that hospital?—We had fewer cases.

1411. Was that falling off in the special area or in the rest of **A**
the district, or was it more noticeable in the special area?—It was
more noticeable in the special area. I noticed that on December 9
there were 17 cases in that special area. After that it went down in
successive weeks to 4, 6, 6, 5, 2, 1, and gradually disappeared.

1412. Where will my Lord find it?—It is not in the printed **B**
tables.

1413. Have you written out this list?—I wrote out that list.

1414. Have you got it before you?—Yes.

1415. That is correct?—Yes.

1416. Where did you compile it from?—I compiled it from the **C**
hospital register, or rather my register at the Public Health Office.

1417. Notifications are given to you, and you enter them in the
book?—Yes.

1418. This list is compiled from the book?—Yes.

1419. And that is correct?—Yes. **D**

1420. I think that does give more information than the printed
tables?—I put them in (documents put in).

1421. Then you say in December it fell down from 17 to 4, 6, 6,
and so on. That was a falling off not observable in other districts?—
Quite so. After the end of the year the epidemic did not last much **E**
longer—it disappeared at the end of April or the beginning of May.

1422. It declined in the spring?—Yes.

1423. I want to ask you about this fire—were there a number of
new cases after this fire?—Yes, a considerable number amongst **F**
people living around the hospital.

1424. Around the hospital that was burnt?—Yes.

1425. Not the old one?—No.

1426. Did you investigate the cases?—I did.

1427. What did you find with regard to a good many of them?—
I found that curiosity had impelled them to go and see the fire. **G**

1428. Were they onlookers when the patients were being
removed?—They were.

1429. How many of these cases happened?—I have no record
of them.

Mr. Justice FARWELL: Is not this rather a long way off? **H**
I am listening as patiently as I can about these other hospitals.

Mr. UPJOHN: I thought it would be rather relevant on the
question as to what might happen to the people on the highway.

Mr. Justice FARWELL: I have got the reports, and I think I must have some definite issue. February 11, 1904

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Dr. W. A. Evans.

Cross-examined by Mr. ASQUITH.

A 1430. You have never been to Nottingham, or at least you have not been to this place?—No.

1431. You know nothing about the local conditions?—No, nothing at all, except what I have seen from this plan.

B 1432. And I may take it from this paper which is before my Lord, that it contains, in your view, an accurate statement of the facts as regards the epidemic in Bradford, and the inference from them?—The facts are quite accurate.

1433. What part of Bradford was the hospital situated in—the old hospital?—The east part, near the eastern boundary.

C 1434. What character of population?—A working-class population.

1435. In what state were they as regards vaccination in the early stages of the epidemic—was it vaccination or partial vaccination, or unvaccination?—It was partial vaccination.

D 1436. I suppose the children were much better vaccinated than adults?—Yes.

1437. There was a certain amount as appears by your report—certain traced cases in which persons had got out of the hospital—nurses and others and had conveyed the disease?—There was one instance.

E 1438. What was the largest number of persons you had under treatment at one particular time?—It was between 180 and 200.

F 1439. Have you formed an opinion from your experience of this epidemic as to whether there was a difference in the dangerousness of the conditions according to the number of patients who are aggregated in one place?—My experience leads me to think there is no doubt about that, that the greater the number the greater the danger.

1440. And I suppose the greater the number of acute cases?—Yes.

G 1441. As far as the cases go, is your experience such as to enable you to say at what point the aggregation ceases to be dangerous—I mean how many persons you may safely have in one hospital without their being a source of danger?—No, it does not.

H 1442. You cannot say, for instance, whether a hospital which is confined to 40 cases would not be a source of danger?—I am not in a position to say.

1443. I suppose if the number of cases—acute cases—under

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 Dr. W. A. Evans. treatment at any given time did not exceed 15 or 20, you would hardly regard that hospital as a source of danger?—I think there would be a danger. If you take the average of the 40 cases, probably 15 or 20 of them would be acute.

1444. I am putting 40 cases in various stages, some of them convalescent or part convalescent, and some 15 or 20 acute cases. Would you regard that as a source of appreciable and substantial danger—not possible or potential danger?—Within a quarter of a mile I think it would be a source of appreciable danger. **A**

1445. And beyond a quarter of a mile?—Much less. **B**

1446. And I gather you attach considerable importance to what you call the length of exposure?—I do.

Re-examined by Mr. UPJOHN.

1447. With regard to this question of aggregation. Do you agree with Dr. Chalmers that the fluctuations in the special area round the hospital correspond not so much with the accumulation of numbers under treatment as with the fluctuations in the number of admissions?—Yes, I think that would be so. **C**

1448. That agrees with your experience?—Yes, it does.

1449. And with regard to confining the hospital to 40 cases. Of course, if there was an epidemic and great pressure, do you think any authority would be able to resist the temptation?—I have never known them do it yet. **D**

Mr. UPJOHN: We do not want to multiply these instances beyond what your Lordship thinks fair and proper. I have one other name in my list, and that is the last. **E**

Mr. Justice FARWELL: You can do what you please.

Dr. J. Priestley

DR. JOSEPH PRIESTLEY, sworn.

Examined by Mr. UPJOHN.

1450. Are you a Doctor of Medicine of Edinburgh, and do you hold a diploma of public health of the University of Cambridge? **F**
 —Yes.

1451. At present I think you are Medical Officer of Health at Lambeth?—Yes. February 11, 1904

1452. And for some years you were Medical Officer of Health for the borough of Leicester, and a Superintendent of the Infectious Diseases Hospital at Leicester?—Yes. Dr. J. Priestley.

1453. Will you tell me during what time you held the appointment of Medical Officer at Leicester?—I was there for three years.

1454. Give me the years?—1891 to 1895.

1455. During the time that you were there was there an outbreak of small-pox?—There was a small-pox epidemic.

1456. You were Medical Officer of Health, and also Superintendent of the Infectious Diseases Hospital?—Yes.

1457. Did you make a report to the local authority which has been printed?—Yes.

1458. I think so far as regards the matter we are inquiring about here, the material parts will be found commencing at page 35, and I think going on to page 46?—That is the part of the epidemic that relates to a suburb alongside the hospital.

1459. I do not want to travel through that, but I may take it generally that the statements in this report are true and accurate?—Yes.

1460. And they are made by you of your own knowledge at the time, and the tables it contains are they completed for materials in your possession as the Medical Officer of Health?—Yes.

1461. And superintendent of the hospital?—From the notification books and the books of the hospital, and then I had the advantage of seeing myself every case, and I visited every infected house all through the epidemic.

1462. This report was made in?—1892-3.

1463. The report was made the following year?—Yes, the beginning of the following year.

1464. The beginning of 1894. Since then there have been several cases of outbreak in which other gentlemen have made observations as to the effect of a small-pox hospital on the area or zone round the hospital?—Yes, elsewhere.

1465. You are familiar with the literature of the subject?—Yes.

1466. Has what has happened since the outbreak confirmed the opinions that you then formed or not?—The result of my reading and training was that I was really in favour of hospitals not being quite so dangerous as the Local Government Board had laid down in their official reports, but after the epidemic which I investigated at Leicester, in which, as I have already stated, I had an opportunity of seeing every individual case and treating it afterwards in the hospital,

I was driven to the only conclusion I think you can be driven to for

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 Dr. J. Priestley.

the facts as stated in the report, viz., that a small-pox hospital is undoubtedly a source of danger to the surrounding district, is the result of aerial convection or of maladministration; whether it goes through the air or whether it goes through the ground or how I am not prepared to state. There is no question as far as Leicester was concerned that it was an undoubted danger to the public health around the neighbourhood, which was a specially isolated suburb—a new suburb that had been built after the hospital had been placed there. The hospital was placed there first in the epidemic of 1871-2. After that they built alongside the hospital a little colony of houses quite separate and distinct from the town itself.

1467. And that assisted your observation very much?—It made my observation unique, because I had the opportunity of dealing with an isolated district containing 600 houses and 3,000 people.

1468. And you did form the opinion that the hospital had been a source of disseminating disease to the district?—It would be impossible from the facts to have formed any other opinion, I think.

1469. And the opinion that you formed some ten years ago—has it been confirmed by cases that you have read about since?—I think my experience is the experience of every other medical officer.

1470. Then your opinion is confirmed?—Yes, and all practical medical officers who have actually investigated these things are bound to arrive at this conclusion. The report I may say is quoted in the Vaccination Commissioners' report which you will allow me to put in. It is the appendix to the final report. (Report put in.) It has a map.

1471. I think the map might assist, my Lord?—You can see the whole thing at a glance. It is a map prepared by an independent investigator.

Mr. Justice FARWELL: It is a very spotted plan. It is a report in the Blue Book, and to that extent it is official, but it contains a good deal more than a mere plan.

Mr. ASQUITH: So I gather from a distant view of it.

1472. Mr. UPJOHN: You are familiar with this plan?—Since the report came out I have seen it, but I had no hand in the preparation of it.

1473. Have you examined it to see whether it is accurate or not?—It corresponds with my official plan in possession of the Leicester Corporation. I had a similar plan which I dotted week by week.

but that I can produce on my subpoena, for the simple reason that I am no longer medical officer. February 11, 1904

1474. But is this a copy of that?—That I cannot say. This is supposed to have been made independently by the observer sent down by the Vaccination Commissioners. Dr. J. Priestley.

1475. Have you examined this plan. Are you able to say whether it correctly shows the number of cases by the red marks?—Absolutely.

1476. I think that is all I need trouble you with as to your experience. We shall find in your book all the proportions in the special district and in the rest of the city?—Yes, you will find that all worked out from pages 35 to 40. You will see the incidence in Newfoundpool as compared with the rest of the borough. Whether you have regard to the number of actual cases of small-pox or to the number of infected houses, you will find that Newfoundpool district, on account, in my opinion, of its close proximity to the hospital, suffered 15 or 20 times as much as the rest of the borough.

1477. It says as 1 to 15. Have you considered the facts with reference to the hospital built by the corporation of Nottingham?—I have.

1478. You are not familiar with the conditions, are you?—I have not been up specially in connection with this case, but I have been at Nottingham. When I was at Leicester I used to go over and see the medical officer, and I can locate this site by means of this map pretty well.

1479. You have not been there since the building has been put there?—No.

1480. But you have some knowledge of the district?—Yes.

1481. It has a site of 4 acres and a frontage of 1,000 feet to the road from Nottingham to Bestwood?—That is so.

1482. The suggestion is that there are to be 40 beds, and no more, in the hospital. In your opinion are those proper conditions for the erection of a small-pox hospital?—In what way proper conditions?

1483. First of all, with reference to the population round. Let me give you the figure of within a quarter of the building itself—there are 204 residents. If you look at the plan you will see 22 cottages together there?—Yes.

1484. There are 99 people living there and other parts within this radius of a quarter of a mile there are persons living who bring up the total to 204. In your opinion is there a substantial risk or danger to the people who live within the area?—Judging from my Leicester experience, an undoubted danger to the people living within the radius.

1485. You are assuming 40 beds with a normal proportion of

February 11, 1904 acute cases?—Yes, but in times of epidemic there is a great deal of
 — elasticity. The sanitary authorities had an unhappy knack of throw-
 Dr. J. Priestley. ing down tents in all directions.

1487. Mr. Justice FARWELL: Supposing there were 39 beds?
 —I should think it would be a danger. You cannot lay down a hard A
 and fast rule and say that 39 beds would not be a danger, though 40
 beds would be.

1488. Mr. UPJOHN: You think there would be a real danger
 to the people within the quarter of a mile?—Undoubtedly. B

1489. Apart from the people who reside within that zone, and B
 taking the case of people who for eight or ten hours a day are work-
 ing within that area, would there be any risk to them?—Clearly.
 You can catch small-pox in a second or a minute, or you may be
 exposed and not catch it, according to your state of health or power C
 of bodily resistance, for many hours or many days.

1490. Now as to the persons who are using the highway in front
 of the hospital along this frontage of 1,000 feet. The highway is
 17 yards, that is 50 feet from the hospital buildings. Do you think
 there is an appreciable risk to persons using the highway?—Clearly D
 in passing a small-pox hospital where acute cases are being treated.

Cross-examined by Mr. ASQUITH.

1491. You do not agree with the Local Government Board that
 it is safe to erect a small-pox hospital provided there is a population
 of not more than 200 within a quarter of a mile, do you?—Officially E
 I agree with the Board they are bound to do something.

1492. I do not ask you “officially,” but as a witness. Do you
 agree with the Local Government Board or not?—Yes. It is a good
 working practical rule.

1493. You think it is?—Yes.

1494. And do you think the other rule a good working rule, if F
 provided there were no more than 600 people within half a mile, it is
 safe?—I think it is a fair working rule.

1495. But as I understand, you still think there is danger?—
 There is not a shadow of doubt about it.

1496. There is a danger wherever you put a hospital?—Yes, pro- G
 vided there are people round about it.

1497. What is your limit of distance for a possible infectivity?—
 I limit myself to the half-mile radius.

1498. Do you say beyond the half-mile we are safe?—I do not say that. February 11, 1904.

1499. When does one become safe? At what distance from the small-pox hospital?—I should not like to say. From my experience, Dr. J. Priestley.

A I should say you are certainly in danger up to half a mile.

1500. You would not like to say I am beyond danger at a mile?—I would not like to say.

1501. Or a half mile?—It is difficult to make a hard and fast rule. I could not give it as my official opinion that a person who lived half a mile away was in danger.

1502. You bring in the word "official" again, but I want your personal opinion?—My personal opinion is that a small-pox hospital is an undoubted danger the nearer people are to the hospital.

1503. And you won't say that within a half a mile they are not say?—I am not prepared to say that within a half a mile there is so much danger as within a quarter, but I am prepared to say that the danger at a distance of a mile is not anything so great as at a quarter of a mile, and because it is shown in an actual street that where a street actually abutted on the hospital, the people suffered out of all proportion to those in the street which did not so abut upon it. That is the case of one street which faced the hospital and one street which was away from it.

1504. I suppose the population of Leicester is about equally unvaccinated, whatever portion you go to?—Then again Newfound pool was a fortunate instance where the neighbourhood had not followed the bad example set by the rest of Leicester.

1505. It was more vaccinated?—Yes; it was just beginning to get contaminated by its proximity to Leicester.

1506. I see from the figures here the proportion of vaccinations was not high even in the enlightened district?—No, it was not.

1507. It was what you would call a partially vaccinated district?—Yes, and you will see that those who suffered most were the poor children.

1508. I see there are two periods you compare—February and June. In June you say there was a marked spread of the disease near the hospital, and in February there was not?—Yes.

1509. How do you account for that?—If I may say so, I am sorry you have not read my report, because I have proved it to the hilt.

1510. What have you proved?—I have proved the reason why small-pox did not spread in February and did spread in June.

1511. What was the reason?—I will tell you. I did not find it out in a minute or two. It took me months and months to consider the facts. You begin it at page 41 and it goes on to page 44 of my report.

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—
Dr. J. Priestley.

1512. On page 41 you say, "In considering air-borne infection there are many matters deserving attention," and you suggest that the germs may go above ground through the atmosphere or under ground through drains?—That is so.

1513. Both those conditions would operate in February and June?—Yes. A

1514. No difference there?—No.

1515. Then we come to another possible cause—another way in which germs might be carried is by flies and rats?—You have missed a paragraph out—the most important tit-bit. B

1516. I am extremely sorry—let us have the tit-bit?—"Foremost are the accompanying meteorological conditions—e.g., rainfall, temperature, direction of winds, &c., and in considering these conditions I have been struck with the great differences between February and June." C

1517. What are the conditions—the rainfall, temperature and wind?—Yes, wind is the most important in the state of the weather.

1518. Is it your view that when the wind blows the germs are more infectious than when you have a perfect calm?—It would be naturally so. D

1519. I have been told the exact contrary?—When the wind is blowing in one direction it is clear that the germs, whatever they are, will have to be blown in the same direction. We have found if there is anything in this air-borne theory that through February the winds were all from the hospital, away to the open country. During June the wind was from the hospital directly over Newfoundpool, which was most startling. E

1520. That is your explanation—the difference in the wind?—Yes, whether it was the actual germs that were carried or flies.

1521. I am coming to the flies. You say "another way by which the germs might be carried"?—That is what I thought was the explanation. F

1522. "Is by flies, rats, etc." At first blush this may seem a far-fetched theory. When examined more carefully it is not so. Then you give the case, "Cholera bacilli can live in the alimentary tract of a fly, and be found alive in the excreta." Then follows this remarkable passage: "Considering the number of flies and rats we have had at the hospital." You had great numbers?—Yes, swarms. G

1523. "The flies we might speak of as a plague in such quantities were they? It is easily understood how they might carry infection about—more especially during the warmth of June than during the cold of February"?—Because there are very few flies in February as a rule. H

1524. But there are rats in February?—Yes. I

February 11, 1904.

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Dr. J. Priestley.

1525. I did not know that they varied with the seasons. Do you really suggest that that is a possible explanation?—I think that the flies are a possible explanation, and since the writing of this report it has been proved conclusively in connection with typhoid fever, that flies are capable of carrying it in houses such as you have in Nottingham.

A 1526. I suppose flies can carry it a long way?—Yes. I think a fly can fly a long distance under favourable conditions as regards sunshine and wind.

B 1527. One does not quite see within what radius from the hospital one is safe, if that is the case?—I would not like to say the range within which you would be safe, but I can tell you the range within which you are not safe.

Re-examined by Mr. UPJOHN.

C 1528. The range within which you are not safe, do you say is a quarter or half a mile?—You are certainly not safe within a quarter of a mile, and you are not safe within half a mile, but judging from my own experience, and I will speak of actual facts, you are not safe within a quarter of a mile, and you are not safe within half a mile, and the danger increases as you come near to the hospital.

D 1529. You said that the Local Government Board Rules, so far as they should be called rules, are practical working rules. I suppose they depend upon the size of the hospital, the number of the beds and so forth?—Yes, the Local Government Board, of course, was bound to lay down some rule because public opinion was forcing its hands. There is no doubt about that. As a result of that there was this investigation, and the Board, giving way to outside pressure, undoubtedly had to lay down some sort of rule.

E 1530. And you say that it is a practical working rule. I suggest to you that it depends on the conditions of the case?—Yes, clearly.

(Adjourned to to-morrow morning at 10.30.)

In the High Court of Justice.
CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,
Thursday, February 11th, 1909

BEFORE
MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

V.

THE MAYOR, ALDERMEN AND
CITIZENS OF THE CITY OF
NOTTINGHAM.

MINUTES OF EVIDENCE.

SECOND DAY.

Three

<i>Dr. John Clough, re-called</i>	-	-	-	PA
<i>Dr. George Bury Wray</i>	-	-	-	
<i>Dr. Joseph Wilfred William Robert Fletcher</i>	-	-	-	
<i>Dr. Archibald Kerr Chalmers</i>	-	-	-	10
<i>Dr. William Arnold Evans</i>	-	-	-	11
<i>Dr. Joseph Priestly</i>	-	-	-	12

HIND & ROBINSON,
8, Stone Buildings, Lincoln's Inn, W.C.,
Agents for WELLS & HIND,
Nottingham.

SHARPE, PARKER, PRITCHARDS, BARHAM & LAWFOR
12, New Court, Carey Street,
London, W.C.,
Agents for SAMUEL GEORGE JOHNSON,
Town Clerk,
Nottingham.

In the High Court of Justice.

CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,

Friday, 12th February, 1904.

BEFORE

MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL AND OTHERS

v.

THE MAYOR, ALDERMEN & CITIZENS OF THE CITY OF NOTTINGHAM.

[*Transcript from the Shorthand Notes of BARNETT & BARRETT, 40, Chancery Lane, W.C., and H. H. TOLCHER & Co., 93 and 94, Chancery Lane, W.C.*]

Counsel for the Plaintiffs: Mr. UPJOHN, K.C., and Mr. A. LLEWELYN DAVIES (instructed by Messrs. HIND and ROBINSON, Agents for Messrs. WELLS & HIND, Nottingham).

Counsel for the Defendants: Mr. ASQUITH, K.C., M.P.; Mr. MACMORRAN, K.C., and Mr. R. J. PARKER (instructed by Messrs. SHARPE, PARKER, PRITCHARDS, BARHAM & LAWFORD, Agents for Sir SAMUEL GEORGE JOHNSON, Town Clerk, Nottingham).

February 12, 1904

EVIDENCE—Third Day.

Dr. J. C. McVail.

DR. JOHN CHRISTOPHER McVAIL, sworn.

Examined by Mr. UPJOHN.

Mr. UPJOHN : This is not a witness of the class we had yesterday, but an expert who has visited the site and who gives A general evidence.

1531. Are you a Doctor of Medicine of the University of St. Andrews ?—Yes.

1532. And you hold the Diploma in Public Health of the University of Cambridge ?—Yes. B

1533. You are a Fellow of the Royal Society of Edinburgh ?—Yes.

1534. An Examiner in Medical Jurisdiction and Public Health in that University ?—And in Glasgow.

1535. I think you have been President of the Sanitary C Association of Scotland and of the Study of Medicine section of the British Medical Association ?—Yes.

1536. Have you given special attention and study to the subject of small-pox and vaccination ?—Yes, for 20 years.

1537. I think you have written several articles upon those D subjects—works and papers ?—Yes.

1538. I think you were examined at 12 sittings. I hope your evidence will not occupy very long to-day—of the Royal Commission on Vaccination ?—Yes.

1539. I think you act as Commissioner for the Local Government E Board of Scotland in conducting inquiries as to sites for small-pox hospitals and such like matters ?—I have done so. That is not a permanent appointment, that is just for the occasion.

1540. That is pro haec vice ?—Yes.

1541. You have done that on several occasions ?—I have acted F as a commissioner on several occasions, two of them being with regard to the sites for small-pox hospitals.

1542. I think you are county medical officer for two counties in Scotland ?—Yes.

1543. This topic of the dissemination of small-pox to long dis- G tances is no new view, is it ?—No.

1544. I am not going to take you in detail into it, but I think there are writings upon the subject more than a century old?—That is so. February 12, 1904
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Dr. J. C. McVail.

A 1545. There is one case on record of infection across a river 1,500 feet wide?—Yes, in America.

1546. The Charles River at Boston?—Yes.

1547. And the subject has also been discussed by professors of medicine in France?—Yes, by Sir John Rose Cormack in Paris, and a man to whom he refers, Dr. Bertillon.

B 1548. Sir John Cormack was Physician to the British Hospital in Paris?—Yes.

C 1549. Did Dr. Bertillon ascertain that in the Department of Paris, in which he was a medical officer, there was an infection from the small-pox department of the Hotel Dieu?—Yes, he mentions there a fact parallel to what Dr. Priestley mentioned, that in one street houses with their windows facing the hospital received the infection of small-pox, and that in the same street houses with their windows the other way were not infected. I observe that Dr. Priestley mentioned that.

D 1550. You are familiar with all these reported cases, of Fulham and Bradford that we heard of yesterday?—I have read the records of them.

1551. You have no personal acquaintance with them?—No.

E 1552. And also you are familiar with the other reported cases we have not gone into mentioned in the Local Government Board reports?—Yes, I have read them all.

F 1553. Basing your opinion upon your experience and knowledge thus acquired, will you tell my Lord what is your opinion as to the operation of a small-pox hospital in disseminating the infection?—I am of opinion that small pox hospitals are very dangerous in disseminating the infection of small-pox to surrounding populations.

1554. Is that the present state of medical knowledge and science upon that subject?—I so regard it.

G 1555. How you formed an opinion as to the extent of the area round the hospital which is dangerous. First of all, does that depend upon the number of acute cases which are being received and treated?—Yes, it depends on the number of acute cases—not on the convalescents.

H 1556. Will you for a moment assume a number of 40 cases with the average number of acute cases amongst them. What do you say is the normal number?—Of convalescents to acute cases?

1557. No, of acute. There are the cases as they come in, as they become acute, and then as they go off?—At the beginning, of course, there are a larger proportion of acute cases until the average becomes

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established by the hospital being fully occupied; but after it is fully occupied I should think that the average of the acute cases, allowing the ordinary period of residence after acute stage is passed, would be about two-fifths of the total cases.

1558. I think yesterday we had it one-third—that is near A enough?—Yes.

1559. Assuming as I had said 40 beds in this particular hospital, in your opinion would the hospital be a source of danger—I mean of serious and substantial danger—to the highway and to the neighbourhood?—I am of that opinion. B

1560. Now is there a case on record in which a less number of beds than that has been used, and great infection has followed?—There are cases so recorded.

1561. Mr. UPJOHN: One of them, I think, is the recorded Sheffield case. My Lord, the Sheffield case will probably be familiar C to your Lordship. It was mentioned a good deal in the Manchester case, in Dr. Buchanan's report. I am only going to read a few lines from pages 11 and 12, that is, in the preface with the Roman numerals, and at the top of page 12 your Lordship will find this: "In the fortnight of June when the hospital began to exert a probable D but not unquestionable influence on the area surrounding it the average daily number of small-pox patients in the hospital was 14. In the fortnight four cases only had been admitted. In the fortnight of July, when the influence of the hospital began to be unequivocally E exerted, the average daily number of patients was 36." Is this one of the cases on which you base the opinion that 40 is a dangerous number?—That is an example.

1562. The report on that begins on page 11, "Then the disease generally extended itself (reading to the words) "More harm than F good to the borough." As to that latter observation, is that an opinion which is now very current amongst those who have studied the question?—That a hospital does more harm than good on the average? G Well, it will do more harm in the neighbourhood. It is a balance of advantage whether the excess of cases in its neighbourhood is more or less than the deficiency of cases in the neighbourhood for which the persons are removed.

1563. When you say it is a question of balance, of convenience and inconvenience, and of course one must remember the evidence yesterday. I will ask you whether you agree with it. There is a great facility in removing small-pox patients. They travel well?—Oh, yes, H very well.

1564. Let me put this to you. Are you familiar with the result of the exclusion of small-pox hospitals from the metropolis, and the removal of all small-pox cases to the river ships and the hospitals

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down near Dartford?—Yes; that is the strongest evidence I know in support of the view that these hospitals on the average do more harm than good. The proportion is given with relation to the metropolis as a whole, and to London. Small-pox has always been more prevalent in the metropolis than in the provinces. The excess of small-pox in the metropolis, used to be as two to one compared with the provinces in proportion to the population. But after these Metropolitan Asylum beds were established and in working order in the metropolis, the rate mounted up to six and sevenfold that of the provinces, and when the hospitals were cleared out of London—of course there has been very little experience since then—the rate fell again. It was only while the Metropolitan hospitals were in use for small-pox that London had six or seven times as much small-pox relative to the population as the provinces had.

1565. According to the official report your statement is almost too moderate. Would your Lordship mind looking for a moment on this subject, at the volume we first handed up, the 10th Annual Report, 1880-81, which was so much in request that it was republished in 1901. Would your Lordship look at p 3 in the Roman numerals of the preface to the new edition. It is signed by Dr. Power I think, in August, 1901. It is the last paragraph on p. 3. "The danger from the spread of small-pox in the neighbourhood of hospitals in which patients suffering from the disease are aggregated which Sir R. Thorne had in two instances found reason to suspect, and which was fully illustrated by the report in the same volume." On the influence of the Fulham Small-pox Hospital in the neighbourhood surrounding it "has since been exemplified by the further observations on the influence of the Fulham Small-pox Hospital on the neighbourhood surrounding it" has since been exemplified by the further observations on the influence of the Fullham Hospital published in the annual report of the Medical Officer of the Local Government Board for 1884, and by experience during epidemics of small-pox at Sheffield, Bradford, Warrington, Leicester, Gloucester, and elsewhere. On the other hand, in London the removal of small-pox cases to hospitals at a distance, instead of treating them in hospitals within the Metropolitan limits, has been followed by a remarkable diminution in the prevalence of the disease. In the years following the great epidemic of 1871 until 1885 minor epidemics recurred in London about every four years; but since 1886, the year in which the treatment of small-pox in hospitals within the limits of the metropolis was discontinued, the London death-rate for that disease (including the deaths from small-pox of Londoners in the hospitals outside the Metropolis) has declined almost to a vanishing point." Then in this Sheffield report I have already read to your Lordship the paragraph at the top of page

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12. Then that sub-paragraph marked A gives some interesting facts, and then B is very important because it shows what happened when they removed that hospital because, of course, all these local authorities are going further afield instead of doing what the Nottingham Corporation does. A

Mr. Justice FARWELL: I have read it.

Mr. UPJOHN: Then there are elaborate reports and plans in this by Dr. Barry beginning on page 275, and going down to the foot of page 277. It gives in much greater detail what Dr. Buchanan summarised, and I do not think that it is necessary to put it. B

Mr. Justice FARWELL: You need not put it to Dr. McVail.

1566. Mr. UPJOHN: I need not put it to Dr. McVail. As your Lordship intimates I may use it afterwards. With regard to the Fulham Hospital case, have you exceeded Dr. Power's figures given at page 321 of the five periods of epidemic treated at the Fulham Hospital?—Yes. C

1567. And is it the fact that in two of the periods—the period mentioned, namely, the 1887 period—the average number of patients under treatment was 50, and in the fourth period mentioned the average number was only 20?—Yes, I have not the figures beside me, but I have no doubt that that is so. D

1568. You have worked that out?—Yes, I have looked at these figures.

1569. And taking that for that period, I see in the quarter-mile circle the incidence of the infection was 1·85, whereas when you get to the threequarter-mile to a mile it was ·28?—Yes. E

1570. So that that is a difference six times as large?—Yes.

1571. Although there are only 29 under treatment on the average?—Yes. F

1572. I think you have got the calculation showing that it was 29?—Yes, it is about 29. It depends a little on the average duration of stay in the hospital. I am taking the average.

1573. Now, I want to ask you with regard to the hospital sites. You were commissioner, I think, in connection with the new Glasgow hospital site?—I was, for the Local Government Board of Scotland. G

1574. Just let me ask you for your opinion on one or two general points. First of all, I want you to tell my Lord your opinion as to the proper site for the hospital, having regard to the district round

whether populous or otherwise?—The district round should be least available, in view of other facts. February 12, 1904

1575. I see Dr. Power in this volume says that they should be separated from populous parts by wide intervals of open ground?— Dr. J. C. McVail.

A Yes, I quite agree.

1576. Now, then, as to propinquity or otherwise to traffic routes, what do you say as to that?—That is equally important.

1577. As to the new Glasgow hospital, will the outside fence touch any public thoroughfare?—No, I expected the plan to be brought here of the new Glasgow hospital, regarding which I was the Local Government Board's commissioner.

1578. I will not trouble you about the plan; but what is to be the distance of the hospital fence from any public thoroughfare?—The area included within the hospital fence from Glasgow was put before me as amounting to 54 acres, but I understand that now they even propose to extend that. I cannot off-hand tell you the distance from the fence, but it is a long way off.

1579. Mr. UPJOHN; There is a statement in the proof, but I cannot press that?—If I may refer to my notes I can give you the facts.

Mr. UPJOHN: In a matter of this detail may the gentleman do that?

Mr. Justice FARWELL: You do not object to that, Mr. Asquith? It is only the measurement of the fence.

E Mr. ASQUITH: No, my Lord.

The WITNESS: May I refer, my Lord?

1580. Mr. Justice FARWELL: Yes?—The nearest ward to the road would be 900 feet distant. There is one little point to add to that. The mortuary and the laundry which may also be regarded as capable of spreading infection are about, I believe, 500 feet from the road. These are the nearest buildings that can be regarded as having anything infective about them.

1581. Have you considered the suggestions of the Local Government Board, or rather the conditions that they impose in cases within their jurisdiction where parties come to them for a loan?—Yes.

1582. In your opinion are those adequate in the case of larger

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hospitals?—No, these are minimum conditions, and I think, myself, that even with regard to small hospitals while they may be adequate as far as they go they are incomplete. They take note only of resident population and not of incomers and outgoers.

1583. Incomers and outgoers with regard to the district?—Yes. A

1584. In your opinion is there a danger to incomers into the district traversing the highways?—Yes.

1585. A substantial danger?—A danger in relation to the time that they are within what is regarded as a special area, and, further, as I believe, that danger is greater from the fact that they are in the open air and not within dwellings. B

1586. Assuming a hospital of 40 beds, what in your opinion, is the area within which persons are exposed to serious danger of infection?—I think that a quarter of a mile gives really serious danger, but there is some danger beyond that. C

1587. A quarter of a mile is really serious?—I think so.

1588. And the longer you remain within the quarter of a mile, that is to say the greater the exposure, the greater the risk?—The longer you remain within it, especially in the open air.

1589. The infection when it comes comes at the moment, I suppose?—Yes. D

1590. It might come to a person merely walking along the road where it will not come to a person who is working in the next field all the day?—Quite so.

1591. I think you went to Nottingham with Dr. Thresh on the 1st of December?—Yes. E

1592. You did not go inside the hospital building?—No.

1593. You walked round the site?—Yes.

1594. And you saw the buildings from different points?—Yes.

1595. I think you went to different places in the neighbourhood?—Yes. F

1596. Did you pass through the district called Bulwell?—Yes.

1597. That is between the city and the hospital?—Yes.

1598. Did you go beyond the hospital up to the works, the colliery?—Yes. G

1599. Let me ask you generally. In your opinion, assuming the hospital to be used for 40 beds, having regard to all the surrounding conditions, is there a serious risk to persons within this quarter-mile distance?—In my opinion there is.

1600. Now perhaps you will give my Lord your views on some points of detail. First of all, I think, my Lord, having regard to some documents I am going to read presently, I may fairly put this question: will the hospital of 40 beds be sufficient for a corporation with a population of about a quarter of a million—250,000 souls—if an epidemic should come?—No. H
I

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—Yes.

Dr. J. C. McVail.

A 1602. What provision have you approved in the Glasgow case?—Glasgow intends at the moment to erect wards to contain 180 beds, but the wards are being so set down that whenever required they can be extended to 340. It is 20 less than the double.

1603. Tell me, in your experience in connection with the erection of small-pox hospitals, is that the usual mode of procedure?—Yes, it is the proper mode.

B 1604. You do not want an enormous building sufficient for an epidemic always under maintenance?—That is so.

C 1605. But you want facilities for putting up temporary buildings to a great extent when the pressure comes?—Yes, you want a good-sized administrative block—accommodation for nurses and staff sufficient for a large number of beds, the beds to be extended as required.

1606. In your opinion, if, unfortunately, an epidemic of small-pox should happen at Nottingham with the population I have mentioned, would the 40 beds be anything like sufficient for the population?—I think not.

D 1607. Of course it would only be a rough approximation, but could you give me an idea of what might be required, I mean within the bounds of reasonable probability?—I think I am right in saying that the Royal Commission on Hospitals said that London should provide from 1,100 to 1,700 beds. That was in 1880, and the population, I suppose, then would be 3 millions or perhaps more. I do not know the London census of 1881.

1608. That is something like $2\frac{1}{2}$ per cent.?—That would be a bed, I think, to 2,000 or 2,500 of the population.

F 1609. That would be about 100 beds, which is the figure I find here as representing the probable requirements of Nottingham?—If the population of London were 3 millions and the number of beds provided were 2,500 that would be a bed for every 1,500 of the population. Now Glasgow for three quarters of a million is providing 340 beds or making arrangements for 340 beds.

G 1610. At all events that is very much in excess of 40. I think that is more than 100 here?—That is a bed for something like every 2,000 of population—it is a bed for something like 2,200 of the population of Glasgow.

1611. And something over 100 for Nottingham?—Yes, quite so.

H 1612. We need not go into it very closely?—Yes, quite so.

1613. In your opinion, is that a probable estimate of the call upon their resource if an epidemic came?—I do not know that it is a sufficient estimate for Nottingham because Glasgow is a specially well vaccinated population, and unless Nottingham is exceptionally well

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vaccinated for England it ought to have a greater provision than Glasgow.

1614. Then in that case 100 would be the lowest?—Yes.

1615. Is what you are looking forward to an addition to the buildings on this site?—If they have no other site I think an addition to the buildings on this site may be looked forward to with great certainty. A

1616. Then have you any criticisms to make upon the shape of the site, and the way in which it extends along the high road?—Yes, it is a narrow site running to a point at the north. At the north it is obvious that no small-pox pavilion can be set up where it runs to a point. I think the pavilions can only be set up on the southern part. B

1617. Wherever they are put, they would have to be along the road?—They would have to be put along the road. The present building is 51 feet from the road, and the others could not be any further off, I suppose. They would make it about the same, I presume. C

1618. In your opinion would that increase the danger to the persons passing along the highway?—No doubt; certainly it would. D

1619. Of course, the nearer they approach the residences—for instance, those 22 cottages to the south—the greater the danger to them, I suppose?—Yes. If the building were put down at the south end it would come very close on those allotments at the back. I think there might be two pavilions of the same size as the one shown. E

1620. Those would come, I suppose, almost to the end of their area?—There is very little room there for administrative accommodation in the existing building. F

1621. We are criticising their scheme, except so far as it affects the public. To some extent no doubt small-pox hospitals are necessary evils?—In the present vaccinal condition of the country they are.

1622. Much can be done to minimise the risks?—Yes. G

1623. Do you consider that the Corporation of Nottingham in selecting this site and erecting the present building upon it, has done what can be fairly done to minimise the risk?—No, very far from it, I think.

Cross-examined by Mr. MACMORRAN. H

1624. Have you had any personal experience of the effect of an hospital beyond what you have read and heard?—Long ago, without taking any record of it, I can go back in my memory to an epidemic

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which occurred just 30 years ago, and where I am now convinced there was hospital influence at work in spreading the disease; but I can give no record of that and have never published anything upon it.

A 1625. Save, and except that one case, is the opinion you have, as you have expressed it, the result rather of your reading and investigation than of your experience?—That is so.

B 1626. Now you have stated in answer to my learned friend that the present state of medical opinion was that an hospital may be a source of danger to the neighbourhood, or would be?—That is a universal opinion.

C 1627. That is what I was going to ask you—is not there a very serious difference of opinion on that point?—I hope not—there may be a serious difference of opinion as to the theory by which hospitals are held to become dangerous, but it would be a serious thing for the health of the community if there was a serious difference as to the fact of their being dangerous.

1628. Is not there a serious difference of opinion as to the fact?—I have not met with that much.

D 1629. Are you aware of the evidence that has been given in this Court with reference to small-pox hospitals in various cases?—Which cases?

1630. Cases that have come before the Courts in England, and I think one case in Scotland?—No, I am not acquainted with the proceedings of the Court if you refer to the cases.

E 1632. I am speaking now of the evidence given. Have you ever made yourself acquainted with the evidence given in those cases. I suggest to you that a large body of evidence has been given by many medical experts that small-pox hospitals if properly administered, need not be a source of danger?—I am not acquainted with such evidence.

F 1633. Then it would surprise you if such a body of evidence exists?—Yes.

1634. You have mentioned the Fulham case?—Yes.

G 1635. Are you aware that Dr. Bridges, one of the officials of the Local Government Board, differed from Dr. Power's conclusions with regard to that case?—Yes.

1536. In Sheffield there were several factories at work besides the hospital, to account for the spread of the outbreak, were there not?—There always are.

H 1537. But very specially in Sheffield?—The Sheffield epidemic occurred before the Notification Act was in force. That was a factor, and as I say there are in addition to the hospital other sources always.

1639. Yes, sources of a very special character. I am not speak-

February 12, 1904 ing now of ordinary sources that we all know of, but of very special facts?—Yes, I have no doubt.

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1640. I am reading from page 286 of the Local Government Report on the Sheffield case: "The population of Sheffield is, for so large a town" (reading to the words, "on account of the presence of small-pox in the houses"). It would be impossible to ignore a fact like that in a case like Sheffield?—No. A

1641. That would account for a large amount of small-pox?—It would account for a large amount, but it would not account for the difference of small-pox in the area around the Winter Street Hospital as compared with the rest of the town. B

1642. But was not that one of the most populous districts of Sheffield?—Yes, but the practice then was almost universal, and there would not have been a large number of that class of the population in other places than in the Winter Street Hospital area. C

1643. Making every allowance for what you say, does not this constitute a serious factor with regard to the dissemination of small-pox even in the hospital area?—Yes, but the same factor applies outside the hospital area; and what one wants to account for is the difference of the prevalence in the hospital site as compared with that outside. Your agency is at work in both. D

1644. I grant you that. I am dealing now only with the amount of small-pox at present. The same report goes on to point out that a gentleman went about as a faith healer?—But he was not confining himself to the hospital area. E

1645. Possibly not; but wherever he went he would carry the disease with him?—Yes, he would carry it outside the hospital area, and in that way increase the prevalence outside the hospital area, which would tend to equalise it; but still the hospital area remained high in its prevalence. F

1646. You do not know, I suppose, whether he did confine his operations chiefly to the hospital area or not?—No.

1647. I suppose you are acquainted with cases in which institutions in the immediate neighbourhood of small-pox hospitals have been quite free from contamination?—No. G

1648. You are not aware of any?—No, not quite free.

1649. Were you present in Court yesterday?—Yes.

1650. Did you hear my learned friend read a passage from the 10th Report about Nottingham?—I was not in Court all day and I am not quite clear whether I did. H

1651. It was read to Dr. Thresh and it is at page 41. Listen to this: "At Nottingham, 234 cases of small-pox were received between December, 1871, and February, 1872, into a new wing which was immediately continuous to the workhouse buildings and which was on

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one side bounded by a narrow thoroughfare; the windows of the small-pox wards and of the opposite dwelling houses being only 44 feet apart. Every effort was made to secure trustworthy information as to the spread of small-pox either into the workhouse or the streets adjoining, both by application to the officers of the sanitary and poor-law authorities and to medical practitioners then resident in the neighbourhood, but no such spread could be heard of. On the contrary, the dwellings in the vicinity of the ward buildings appear rather to have exhibited immunity from the disease"—Yes, I was not present when that was read.

1652. That would apparently be an exception to your rule, would not it?—Yes, one would need get at the facts very exactly to measure the value of that.

1653. I am reading from the same report?—Yes.

1654. Do you know Dr. Ridge's report of 1887?—Yes.

1655. In which he criticises Dr. Power's report?—Yes.

1656. I do not propose to read it at any length. Here is the conclusion on page 230: "Certain facts brought by Dr. Collier and myself before the Royal Commission (reading to the words to protect the population by re-vaccination)?—I am acquainted with that. That refers to a previous report made by him in January, 1881.

1657. That may or may not, but that is another question?—Yes, but I do not agree with his conclusions at all; I do not think his facts are accurate.

1658. At any rate he states it?—Yes, he states it.

1659. Do you know the reference in the 16th annual report of the Local Government Board on the City of London Workhouse and the Homerton Small-pox Hospital?—Yes, know about that case.

1660. Just let me read to you this extract from that: "The following are instances of immunity. The City of London Workhouse which overlooks the Homerton Small-pox Hospital (reading to the words "were traceable to the visitation of friends.") These appear to be exceptions.

1660a. I just want to ask you one or two questions with regard to this hospital. I suppose, so far as the populations immediately around are concerned, the conditions of the Local Government Board are complied with?—Yes, you have not asked me my views about these workhouses or my explanations.

1661. By all means state them?—I have read these and of course have studied these and looked into them. In a paper that I read on the subject 10 years ago, I stated that that appeared to me to be the strongest argument against aerial convection that had been advanced. You will observe to begin with that it is not an argument against hospital influence. As I understand it the position

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in this case is not aerial convection, but hospital influence and those purport to be populations specially protected against contact in a way in which the public cannot be protected so that they do not apply at all to this case. They are a factor in considering aerial convection, but they have nothing at all to do with the influence of a small-pox hospital like Nottingham because you cannot shut up the people there into workhouses and into infirmaries—they are going about. A

1662. Let us see if that is quite right. In the one case I have read—for the moment I forget which—the windows of the opposite houses were, I think, only 44 feet away. That was the Nottingham case?—Yes, that would be so. B

1663. That would be no further away from the hospital than would persons passing along this highway, who must be at least 50 feet away?—You will observe again that that is aerial convection, that is the convection of small-pox from the one to the other. C

1664. What other but aerial convection can there be in respect of a person passing along the high road?—From material that has been related to the hospital at one time, and has become related to the high road at another time—dust and so forth—on the high road, and, therefore, not necessarily directly aerial, but a mediate infection from foci as we call them. D

1665. But is not that simple aerial convection?—But not direct—by stages it is. All small-pox is aerial convection.

1666. Surely that would apply in the case of the streets of Nottingham as much as to the high road, and possibly more so?—Yes. E

1667. And the same with regard to the workhouse, which was within 90 feet or something like that?—Do you wish me to discuss the workhouse. F

1668. I do not care whether you discuss it or not. I am putting it to you that that appears to be rather contrary to your theory, does not it?—No, I don't think so. If you choose I can go into what I think to be the explanation.

Mr. MACMORRAN; I daresay my learned friend will ask you that. G

Mr. UPJOHN: The witness wrote a book upon it dealing with this very point.

Mr. MACMORRAN: I do not want to shut it out from you. I am only putting to him some facts. H

Mr. Justice FARWELL: We can take the book as his examination. February 12, 1904

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Mr. UPJOHN: It is a paper in that book on page 19 (book handed). It begins at page 17, but at page 19 the facts are discussed. A

The WITNESS: That is a reprint that begins on page 18. It will be numbered differently in the volume of the Epidemiological Society's Transactions, of course.

Mr. UPJOHN: I hope he begins at the foot of page 17, and the arguments urged against the theory. B

1669. Mr. MACMORRAN: I notice that the paper you have just handed to his Lordship is entitled "The Aerial Convection of Small-pox from Hospitals." Am I right in saying that the danger from small-pox hospitals is the danger of aerial convection?—In my view it consists partly in aerial convection and partly in intercourse. C

1670. I want you to tell me what the intercourse is?—The intercourse of persons and things—the necessary outgoings from the hospital, and the necessary incomings to it—either outgoings or incomings with regard to provisions and so forth, ambulances, etc. D

1671. Now that must exist at every hospital?—It must exist more or less at every hospital. It was minimised as far as possible in the London hospitals.

1672. You have no reason to believe that it is not minimised here?—I think it is not.

1673. In what respect do you say it is not?—For example, there is only one entrance to the hospital at Nottingham for patients and provisions and for hospital work of every kind. Now if there were a separate entrance for provisions, and so on, so that they could be in no way in contact with ambulance wagons or with the road taken by patients, it would be a distinct improvement. E F

1674. That may or may not be the cause; but is that what you say is the danger here—the danger from intercourse?—That it is one of the two classes of danger connected with the small-pox hospital—one the danger from intercourse, and the other from aerial convection. G

1675. I will deal with aerial convection presently, but there must be intercourse in the sense that ambulances have to go through the streets?—Yes.

1676. And the ambulance in every case must traverse the high-ways to get to the hospital?—Yes. H

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1677. The further the hospital is away from the centre of the population the further it will have to go over the highways?—Yes.

1678. Is that a possible source of danger?—Yes.

1679. Can that be avoided at all?—No; you have to get your patients to the hospitals.

1680. Now with regard to provisions, and so on, these must be taken to every hospital?—Yes.

1681. And you must not assume that they will come from the places where the shops are, which means the town?—No, not necessarily. They could come to a country railway station, and not go near the town.

1682. Do you know at this particular place at Nottingham that the provisions and all things brought to the hospitals are brought in a vehicle provided for the purpose, and under the control of the corporation officers?—I do not know it, but I dare say it is so.

1683. If that were so, it would minimise the danger?—It would minimise it.

1684. Is there anything else. You talked about nurses and the staff going out, but I suppose they have to go out wherever they are?—They have to go out wherever they are.

1685. But if they are confined in an area of 4 acres, with a wire fence half-way round the hospital, they are bound to go out?—But if they were in an area of 54 acres with plenty of accommodation, they could get a good deal of exercise without going out.

1646. Now, with regard to the aerial convection it has been suggested that there is a danger from aerial convection to the persons who work in the colliery down-cast shaft, which is more than half a mile away—do you think that is a practical danger?—I know of no evidence to support that view.

Mr. Justice FARWELL: If I may make the suggestion, what is said is that the danger is especially in the colliers coming from their work and passing along that road, and not so much from the down-shaft.

Mr. MACMORRAN: No, I think it was put strongly by my friend that it was the down shaft.

Mr. UPJOHN: I certainly opened it, but I do not think Dr. Thresh supported me.

Mr. Justice FARWELL: I thought the suggestion rather was in the opening that if a collier by any chance caught it and went down into the pit he would affect other people there.

1687. Mr. MACMORRAN : No doubt if a collier was infected and went to work he might spread the disease to any extent, but so might anybody who would be infected and went about his ordinary avocation in the city or elsewhere ?—Yes.

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A Re-examined by Mr. UPJOHN.

1688. Your experience of Scotland may have brought you into contact with the collier class ?—Yes.

B 1689. Assume that a collier after doing a day's work at the colliery up at Bestwood, which is on the north side of the hospital, is returning to his home at Bulwell and passing along the highway on which the hospital grounds abut, having regard to the nature of his occupation, do you think that he is in a condition more than usually susceptible to taking infection ?—Perhaps a little, but I would not attach much importance to that myself. I mean small-pox is so very
C infectious that it is not necessary to draw a very great distinction between a healthy man and an unhealthy man.

D 1690. I will go back to the different points my friend put to you in their order. My learned friend put to you that Dr. Bridges differs from Dr. Power upon this question of the operation of a hospital in acting as a disseminator of infection. Has your Lordship got the 15th Annual Report before you ?

Mr. JUSTICE YARWELL : Yes, I was looking at that, but I do not think he does.

E Mr. UPJOHN : Now on page 217, I read this important report of Dr. Bridges on the Homerton hospital which led to the elaborate work undertaken by Dr. Power. About the middle of the page he says, "But to reach a distinct conclusion" reading to the words, "an appreciable source of danger to that neighbourhood." It is only fair to him to say that he does consider, I think, that the theory of
F aerial convection is not established. The question he propounds is (1) "Do small-pox hospitals" reading to the words "followed by the communication of disease." He answered the question specifically.

G Mr. Justice FARWELL : Yes, he answers that in terms. I think what he means is that this theory of aerial convection is one on which doctors are not agreed.

The WITNESS : No, they are not agreed.

1690A. Mr. UPJOHN : Then he says on page 219 : " Now

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these two sets of facts"— He has only got those two before him, but, of course, the evidence has accumulated enormously since then?—Yes.

1691. What he says there, I suppose, may be a matter of debate?—Yes. A

Mr. UPJOHN : I am not going to ask your Lordship to decide the question. Now my friend has put to you a number of circumstances which are said to be special to Sheffield—they do not strike me as being very special—namely, that the women of the working classes gossip with one another whenever they have nothing to do?—Yes. B

1692. That is not special to a special area round the hospital?—No.

1693. I see the town clerk of the Nottingham Corporation, on the 17th February, 1903, writes this: "During the last epidemic the great difficulty was not that people would not pass the hospital but that they would not keep away, and continual precautions were necessary to prevent the friends of patients communicating with them over or through the fence or even entering the grounds." That has always been a difficulty?—That has been a difficulty repeatedly. C
D

1694. Is not that one of the reasons why all the authorities on the subject say you must be remote from the public highway?—It is a reason.

1695. Let me put to you what is included in the report of the Royal Commission on Vaccination. That is a report on the same Sheffield outbreak. It is not Dr. Barry's report, but this is a report by Dr. Savile, who is an authority on the subject. It is a Blue-Book, and there is a photograph of the hospital with a fence on to a public place and some cases are given. It is at page 72, if I may hand it to your Lordship directly. The photograph is opposite page 68, and this is on page 72, about half-way down the page. This is by a gentleman who is against the theory of aerial convection. He says: "In investigating the question of aerial spread the very first thing to do is to see whether the hospital, the patients, and its officers are cut off from any direct communication from the outer world, and the outer world from them." Now whether you are an advocate of aerial convection or a disputer of it, that is what you have to aim at, is it not, when fixing the site of your small-pox hospital?—Yes. E
F
G

1696. To cut off direct communication with the outer world?—Yes.

1697. Then he goes on "The open space opposite the hospital (reading to the words "cases unloaded from the fence"). I submit my case does not depend on aerial convection, but it depends on the H

extraordinary amount of inter-communication which may and must take place between this place and the outer world. I just want to put to you the proportions in this Sheffield case. This is at page 277 of Dr. Barry's report—that is the 1887 and 1888 report to the Local

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A Government Board. At the end of the first paragraph he gives the number of invasions per centum of the houses in a circle from the hospital to 2,000 feet and in an outer zone from 2,000 to 4,000 feet, and in the remainder of the boroughs. In the first zone the number of invasions per centum of houses was 7·92—that is practically 8 ?

B —Yes.

1698. In the next zone 3·30— $3\frac{1}{3}$?—Yes.

1699. In the remainder of the borough 1·07—that is really one ?

—Yes.

C 1700. In your opinion would this inter-communication taking place with the people of the working class explain why in the inner zone it was 8 per cent. and in the outside borough it was 1 per cent ?
—Obviously not.

D 1701. Now you have been asked about the negative evidence offered by the absence of infection in workhouses, infirmaries and so forth, in close proximity to small-pox hospitals. Before drawing attention to your book on the subject, there is just one or two points that I want to put to you. In the first place, there were workhouses and infirmaries, and I think another instance was barracks—are those places where you are likely to find people vaccinated?—Yes, in E workhouses the population is largely of a class that has been living in institutions where vaccination is a matter of routine.

F 1702. And you would expect to find them protected by vaccination?—That is an important element to ascertain the nature of these workhouses, it is absolutely necessary to know the vaccinal condition of the population who are under what we call the controlling experiment.

G 1703. I suppose actual attack by small-pox purchases immunity for a long time?—Yes, practically for life, if it is not caught in infancy.

H 1704. So that you want to know also with reference to the previous condition of the persons as to whether they have suffered from small-pox?—Yes, one knows that small-pox prevails largely amongst the vagrant population, and that these workhouses contain a large proportion of the vagrant population. One wants a census of the workhouse population in order properly to weigh the facts.

I 1705. With regard to the age of the people. Is it known whether their susceptibility diminishes after a certain period of life?—Yes, their susceptibility to small-pox diminishes greatly as their years advance.

I 1706. Your Lordship will see a curious illustration of that, which

February 12, 1904 I happen to notice at page 33 of Dr. Chalmer's Report, which was
 Dr. J. C. McVail. put in as part of his evidence yesterday. It is only figures, and I have
 nothing to read.

Mr. ASQUITH : I do not think I asked anything about that.

Mr. UPJOHN ; Yes, this is a criticism on the value of your A
 negative evidence.

Mr. ASQUITH : But this is re-examination.

Mr. UPJOHN : Certainly.

Mr. ASQUITH : Then I do not understand how it arises.

Mr. UPJOHN : He gives the ages in the first column, and the B
 Attack Rate per million ; and as one might expect up to the age of
 10, the Attack Rate per million is small, because most of them would
 have been just vaccinated. Then he gives it in quinquennial periods,
 and from 25 up to 35 is the highest Attack Rate. Then you fall off, C
 fortunately.

Mr. Justice FARWELL : I forget whether this came out in
 examination-in-chief, but it was not in cross-examination.

Mr. UPJOHN : Then your Lordship sees that there is a falling D
 off between 35 and 45, which is still more plain between 45 and 55.
 Then it is very small between 55 and 65, and after 65 the percentage
 is much the same as in early infancy.

Mr. Justice FARWELL : That is an important element in the
 workhouses.

1707. Mr. UPJOHN : That is a very important element in E
 workhouses. I think you have ascertained in the last of the cases—
 the Warrington case—what was the percentage. I think it appears
 in the Warrington report?—The figures do not actually appear, but
 the number of infirm persons is given. Unfortunately, there is not
 an age given, but assuming infirm persons to be over 60 there is F
 41 per cent. of them.

1708. I think the vital statistics show what is the percentage of
 the population over 60?—Yes, the population over 60 in 1881 was

6.5 per cent—roughly about that. The figures are from 55 to 65. February 12, 1904
Roughly I think it comes to about $6\frac{1}{2}$.

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1709. So that without putting too much stress on the 40 per cent. you get six or seven times the proportion of old people in work-
A houses that you do in the world around?—That is to say, people less susceptible to small-pox owing to their age.

1710. And then I think you mentioned that being indoors makes a difference?—I think it does.

1711. I think the foot-note on page 5 of the sixteenth annual
B report has been dealt with by you in your paper?—I discussed the workhouse question in my paper.

1712. I do not know whether you have anything to add to that. In your opinion, are those cases substantiated?—No; to substantiate a case like that you would require to have an age census of the
C population in the workhouses, and you would require to know their susceptibility to small-pox—*qua* vaccination, and *qua* previous small-pox attacks; there is no way in which these facts are given.

1713. And then as a matter of fact it turned out that the number of attacks given was wrong?—Yes, in the case of Dr. Bridges. I
D followed that out in my paper.

1714. Not one case, but 12 or 15 had occurred?—17. He said said there was one but it turned out ultimately that there were 17.

1715. I mean some questions were put upon a theory which when the medical officer of the workhouse was called turned, out to
E be inconsistent with the facts?—That is so. The Commissioners, as far as I could follow it, first assumed that the facts were as stated—thai there had been something like one case in the workhouse—but in the course of the inquiry it turned out that there had been 17.

1716. That destroyed the reasoning?—It diminished the value
F of it.

1716A. Perhaps I might draw attention to this; in this very report of Dr. Buchanan, in which that footnote occurs on pages 6 and 7 in the Roman numerals, he states his own opinion, and in the middle of page 7, if you have that (because I should like to know if
G you agree with this), referring to Dr. Power's figures, he says: "But they need only be studied by the light of the Fulham experiences to give a presumption (apart from any afforded by local health officers' reports) that those experiences of Fulham have been repeated at
H Hampstead, at Homerton, at Stockwell, and at Deptford at each epidemic period; a presumption, namely, that small-pox infection has habitually been distributed from each of those hospitals over considerable areas most conspicuously at the commencement of epidemic periods, with a further presumption that this distribution has greatly influenced the small-pox mortality of whole registration
I districts"?—Yes.

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1717. In fact it was the researches of Dr. Power, and the subsequent information that led in the year 1866 to the metropolitan hospitals being cleared out?—That is so. First of all they tried to reduce the number. They reduced it to 50, then to 40, then 30, and then 25, and then they cleared them out and sent them down to A Long Reach to spread small-pox there.

1718. I had not noticed that in any report that before they removed the hospitals entirely they reduced the number of beds?—Yes.

1719. To 40, 30, and 25?—They reduced the number that could B be admitted to Fulham and these hospitals; 30 was one figure, but the figures are given.

1720. I presume that diminished it, but it was found that it got rid of the excessive incidence of the disease in the area round the hospital?—No. C

1721. And in the result they were cleared out altogether?—Yes.

1722. So that London threw its burden on to poor Purfleet?—Yes, and no London small-pox has gone down.

1723. You mentioned what you call a shifting material. That is D material shifting from the hospital to the highway?—Yes, mid-infections we call it, infection by *foci*.

1724. Is that well known as a form of disease?—Yes, and with all other diseases, scarlet fever and so on.

1725. Is that another reason for placing the hospital at a great E distance from the public highway?—Yes.

1726. In your opinion is 50 feet sufficient?—No; as long ago as 1880 you will find the institute mentioned 100 feet.

Mr. UPJOHN: Then, my Lord, that will conclude the F evidence.

1727. Mr. Justice FARWELL: You say that is the case with scarlet fever. Do you find in some of these infectious diseases that the meteorological factors are not found so readily?—They are found in diphtheria and in enteric, but not in scarlet fever distinctly, or in small-pox. They are groping after it. G

1728. Are there traces of it found in the pus?—It may appear in the form of pus.

1729. After the subsequent period—what you call the incubating period—is the disease then as infectious?—Yes.

1730. Suppose that dust were blown on to that road, would that H be a source of danger?—Yes, so far as it can be blown across, but the idea of aerial convection is material to consider.

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1731. That really would be aerial convection. Suppose you touch the material, or suppose it is on the hands of a man soon after desquamation, that might still proceed from aerial convection?—Yes, it would be still aerial convection, because you do not get small-pox by swallowing the poison; it has to get into the air passages.

A

Mr. UPJOHN (after putting in several documents): Then, my Lord, that will be the plaintiffs' case.

Mr. ASQUITH opened the case on behalf of the defendants.

DR. PHILIP BOOBBYER, sworn.

Dr. P. Boobyer.

B

Examined by Mr. MACMORRAN.

1732. You are a Doctor of Medicine, a Master of Surgery, Member of the Royal College of Surgeons, a Fellow and Member of the Council, and Member of the Board of Examiners of the Sanitary Institute of Great Britain?—I am.

C 1733. Have you been Medical Officer of Health for the City of Nottingham since 1889?—Yes.

1734. Before that were you Medical Officer of Health in Nottingham for the Basford Rural Sanitary District?—I was.

D 1735. Have you had a long experience in connection with small-pox?—Yes.

1736. Extending over some 20 years?—Yes.

1737. Not only in Nottingham, but I think also in Sheffield, Birmingham, and other places?—Yes.

E 1738. Have you actually had to see some thousands of cases?—I have.

1739. Coming to Nottingham, are you well acquainted with the arrangements that have been made from time to time in Nottingham for the treatment of small-pox?—I am.

F 1740. Before this hospital which is now in question was erected where was small-pox treated in Nottingham?—In what was known as the small-pox section of the General Isolation Hospital enclosure, which was about $2\frac{1}{2}$ miles from the centre of the town.

1741. Before that time?—Before it was treated at the old small-pox hospital, at the Windsor Street Hospital—the old Garden

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- Hospital as it was called, close to the workhouse, near the centre of the town—near Woodborough Road.
1742. These places are exhibited on the 6 inch map?—Basford is there.
1743. And Woodborough Road is there?—Yes. A
1744. Right in the centre of the town?—In the centre of the town.
1745. How many distinct outbreaks of small-pox have you had in Nottingham in your time?—Four altogether, I think.
1746. Has there been in your experience in any of these outbreaks any cases of small-pox which have arisen through the presence of the hospital?—Not one. B
1747. You have told us about the Woodborough Road Hospital that is actually in the centre of the most densely populated district? It is. C
- Mr. UPJOHN : Which is the Woodborough, the first one or the second one?
- Mr. MACMORRAN : Woodborough Boad is the first one.
1748. That is the first one referred to by Dr. Thorne Thorne in his 10th annual report to the Local Government Board?—That is so. D
1749. That hospital, besides being in a very populous district, was really contiguous to the workhouse, and separated only by a narrow street from dwelling-houses?—Just so.
1750. How many people were there within the half-mile radius?—A very large population. I cannot give you the actual figure, but it was an extremely poor and densely populated neighbourhood. E
1751. It would run into many thousands?—Many thousands.
1752. You are acquainted, of course, with the site selected by the committee, and now in use, which is the subject of this action?—I am. F
1753. I suppose you were consulted with reference to the choice of it?—I was.
1754. I may ask you at once, in your judgment was it, and is it, a reasonable site?—Yes.
1755. The committee selected it, and did they visit all the sites selected by the Town Clerk?—Yes, they did. G
1756. And you accompanied them?—Yes, I did.
1757. As the result of your visit you selected this one?—Yes, that is so.
1758. Did you have regard to the conditions suggested by the Local Government Board in their circular?—Yes. H

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1759. Did you make inquiries to ascertain the population?— I did.

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A 1760. And as the result of your inquiries, what did you find out to be the population within a quarter and a half mile?—About 180 a quarter of a mile, and over 300 the half mile.

1761. Of course that has reference to the resident population?—The resident population alone. I should say that was within a circle, the centre of which would be the point between the hospital enclosure and the building.

B 1762. You are sure your circle was from the hospital building itself?—Yes.

1763. I think these photographs were taken in your presence (producing photographs)?—Yes, and with my assistance.

C Mr. Justice FARWELL: I suppose these are all admitted, Mr. Upjohn?

Mr. UPJOHN: I have only seen a few of them.

Mr. Justice FARWELL: Those are the only two you have got here.

D Mr. MACMORRAN: Then I think you might see the others, my Lord. I think, if your Lordship will glance at it, that it will be sufficient.

1764. Do these fairly represent the situation and surroundings of the hospital?—Yes.

E 1765. Mr. Justice FARWELL: What is that one?—That is a few taken within the enclosure. They are looking south of the buildings.

F 1766. Mr. MACMORRAN: Before I ask you about this particular site, perhaps you can tell me this. Is there a hospital within the city which has recently been used as a small-pox hospital for the patients from Newstead?—Yes.

1767. That is the one of which Dr. Wray spoke?—Yes.

1768. That is two miles nearer the heart of the city than this was?—Nearly two miles.

G 1769. We know the number of patients brought from that hospital—there were 48, I think?—Yes.

1770. They were conveyed, I suppose, in the ordinary way by ambulance?—Yes.

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1771. That is to the Basford Sanatorium?—Yes.

1772. How long has the present hospital been in use—the one we are now talking about?—It was first used for the admission of patients for a period of one month, between August 12th and September 10th.

A

1773. Then afterwards?—From November 12th last year, continuous almost to the present time.

1774. What is the greatest number of patients you have had in at any one time?—The actual number sleeping in it would be 35 or 36.

B

1775. Of these how many would be acute?—About one-third.

1776. Speaking of that hospital, have you had any case of infection in the neighbourhood of this hospital at all during the time it has been in operation?—Not one.

1777. Either from the quarter-mile or the half-mile radius?—No.

C

1778. With regard to the Bagthorpe Hospital it was suggested there have been six or seven cases within the half-mile radius?—Yes.

1779. Beyond the quarter-mile?—Yes.

D

1780. And within the half-mile radius?—Yes.

1781. Have you made it your business to investigate these cases?—Yes.

1782. Are you able to account for these cases of infection?—Yes, by other means than infection from the hospital.

E

1783. Now I want to ask first of all with regard to the position of this hospital as regards the population in the surrounding districts, first the quarter of a mile, and then the half mile. In your opinion, if the hospital is properly conducted is there any particular danger to the health of the persons surrounding the hospital?—No.

F

1784. Resident near the hospital?—In my opinion, no.

1785. Now, dealing with the highway, passing along the front, in your opinion is there any practical danger to the persons passing along from the persons in the hospital?—No practical danger, no.

1786. In your judgment is there any danger to any person for the time being, outside the fence of the hospital enclosure, of infection from small-pox?—No, there is not.

G

1787. Now I want to ask you a question or two about the site, from your own point of view. This fence we know, bounds all but one part, and that is where the river forms a natural boundary?—That is so.

H

1788. The width of the river we are given as about 20 feet?—About 20 feet there.

1789. What is the height of the embankment?—It was said

15 feet, and that is, I think, about the height. The river has been measured there, and it was 20 feet, as near as I can recollect.

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Mr. Justice FARWELL : If anything turns on it the witnesses on the other side did not know exactly ; but I suppose it does not matter much.

1790. Mr. MACMORRAN : I do not suppose it matters whether it is 15 or 20 feet ; but it is one or the other, is it not ?
—Yes.

1791. And the height of the embankment is what ?—15 feet ;
B and quite precipitous in places.

1792. Is there any practical possibility of communication between the other side of the river and the hospital side ?—No, there is not.

1793. At other points the site is fixed with a closed fence. What
C height is it ?—It is a close wooden fence 6 feet 6 inches high at all points, and capped with a barbed wire crest with three strands of wire.

1794. I think the barbed wire fence was not put up till after the hospital came to be somewhat in request ?—That is so, not until the
D commencement of the current outbreak in November.

1795. Before that time you had only had a few cases there ?—
We had only had a few cases, most of them far advanced in convalescence there, and may I say those cases had been sent there partly with the view of getting the hospital into working order and
E partly in deference to the wish of the Local Government Board.

1796. In addition to the outer fence and the barbed wire fence, you have an inner fence, have you not ?—We have an inner fence 10 feet on the road front between the face of the hospital and 20 feet distant from the outer fence.

1797. And completely surrounding the buildings ?—Completely
F surrounding the buildings.

1798. Is that inner fence an unclimbable fence ?—Yes, quite.

1799. It is shown upon these photographs. (Handing photographs) ?—That is so.

1800. Is it kept locked ?—Always, except when open for
G admitting or allowing exit of persons.

1801. The entrance to the hospital is from the high roads by means of a gate ?—That is so.

1802. That is a closed gate ?—A closed gate of the same material
H and height as the outer fence.

1803. Is that kept locked ?—That is kept locked.

1804. I do not know that we need attach much importance to

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the question, but there was a case mentioned in evidence of some patients in the grounds having been spoken to by persons outside. Do you remember that?—Yes, the man Robinson. I think the incident was said to have taken no place in September.

1805. Robinson was a convalescent, was he not?—Yes, fully A
convalescent.

1806. He had been sent there as a convalescent from another hospital?—From the Bagthorpe hospital, the one I mentioned already.

1807: How long had he been there?—At the time of his discharge. I cannot quite make out what date this incident is alleged to have taken place, but if we take it sometime near his discharge, September 11th or 12th, he would have been in the hospital something over six or seven weeks. B

1808. At that time was he in a condition to communicate infection to anybody?—He was not; he was simply kept there because his face was so disfigured that he was hardly fit to go back to work as a foreman of navvies. He was in the employment of the corporation, and the city engineer would be his chief. I sent his photograph up to the engineer, and asked him if he thought he was fit to go back to work, and he said no, that he would not like to put him in charge of the men on the road; and so we kept him back a little longer until the disfigurement was a little less pronounced. C

1809. He was the sole patient there at the time?—Yes. D

1810. No wonder that he wanted to speak to somebody?—The man wanted very much to go out. E

1811. Could even that incident happen now?—No, it could not.

1812. Why?—Because of the barbed wire fence—the inner fence—intervening between the hospital and the outer fence, and the place is under very strict control. F

1813. I suppose you have a gatekeeper who manages the gates?—We have.

1814. Have you also got a carriage which is solely used for the purposes of the staff—yourself and the other members of the staff?—I have. G

1815. Going to and fro and to the hospital?—Yes.

1816. Used for no other purpose?—Used for no other purpose.

1817. Does that carriage, or whatever it is, convey the provisions and the stores from time to time to the hospital?—It does.

1818. I do not know where these stores are taken from?—They are taken from the general isolation hospital at Bagthorpe. I should say that at Bagthorpe there is a yard in which small-pox contacts are taken while their clothing is disinfected, and from that stores are taken. H

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1819. When a case is notified the first thing is to get the patient removed to the small-pox hospital?—That is so.

1820. Then is it also your practice to try and isolate and disinfect all the persons who have been in contact with the patient?

A —Yes.

1821. And you still drive your contacts and deal with them at Bagthorpe?—Yes.

1822. That is what you mean by “contacts”?—Yes.

B 1823. Now the brougham, or whatever it is, is the vehicle which plies between Bagthorpe and this place?—Yes, or when I want to use it in the town, or my assistants do. It is used generally for calling upon infected houses, and travelling between the two hospitals.

C 1824. But used for no purpose except in connection with the duties of the medical and nursing staff?—Anything to do with small-pox.

1825. And the carrying of provisions to and fro?—Yes, the carrying of provisions to and fro.

D 1826. Is that the vehicle spoken to by one of the witnesses?—Yes. On the occasion in question it was conveying a ward-maid, It was conveying a ward-maid—removing another ward-maid, and it was taking out the day's provisions.

E 1827. So far as you have been able to ensure, has every precaution been taken by the management that the hospital may be as nearly perfect as you can get it?—Yes.

1828. And speaking from your past experience, do you think that has been effective?—I do.

1829. Now I think you have very stringent regulations for the carrying out of the business of the hospital?—Yes, we have.

F 1830. Within a long way from this place there is no public house or anything of the kind, is there?—I really do not know—not nearer than Bulwell, I think. I do not think there is one in Bestwood; in fact, I feel sure there is not.

G 1831. Now, I want to ask you this specifically. First of all, with regard to persons passing along the highway, you have told me you do not think there is any danger to them. Do you think there is any danger at all to the persons living in the cottages near by, at Moorbridge cottages, for instance?—No. I do not.

H 1832. Is there any danger, in your opinion, to the men working in the colliery?—No.

1833. Nor to the men at the works?—No.

1834. Or to the inhabitants of the Forge Farm?—No, I think not.

1835. Or anybody in that neighbourhood?—No, I think not.

1836. Barrow's cottage, for instance, although that is close by.

I In your opinion, would that apply to Barrow's cottage?—I do not think there is any danger to Barrow's cottage.

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1837. Have you made it part of your professional business to investigate as far as you can the cause of every case of small-pox within your district?—Yes, personally or by my assistants. We do all in our power to trace these cases.

1838. As a matter of fact was the whole of the last outbreak due to one tramp?—It was. A

1839. Who came into the city in an infected state?—He came into the city, and the first case was the man who befriended him, and who gave him a meal. Then he went to the lodging-houses and left infection there. Then he stayed three or four days, and after infecting several people in the centre of the town, he was ultimately held up in Rothbury, in Northamptonshire, on account of a notification I had sent on to the medical officer of the district, that such a tramp was at large. B

1840. That was the cause of the whole outbreak at Nottingham?—That was the cause of the whole outbreak at Nottingham. C

1841. Have you ever in the course of your professional experience, found a case which you could attribute to the presence of a hospital per se?—I have not. My experience in details, of course, is confined to Nottingham, but I know of cases that have taken place. There are cases in every outbreak, mild cases. I have known of cases that have come to the knowledge of a medical man, but I have not known one that could be attributed to infection from a hospital. D

1842. It could be attributed to some other cause, contact or something?—Yes, that is so. I have never seen a case that could be reasonably attributed to infection from a hospital. Of course, I do not mean to say that I have seen every case. E

1843. The building on the present site is a building to accommodate 40 patients?—No, it was not built to accommodate that full number; but as we had to take a somewhat larger number than we had anticipated, and as the large majority of those cases have been either convalescents or cases so mild as hardly to constitute cases of serious sickness, we have put them in a little closer than we should acute cases. F

1844. I should like to ask a question about that. You agree you have small-pox in four degrees of virulence?—Sometimes. G

1845. In a very mild case almost impossible of detection?—It might be so, as a matter of fact.

1846. I believe you had one nurse?—Two nurses.

1847. Who got inoculated through some scratch?—There were H chaps on their hands. They had nursed an extremely severe case—the case of the man I first mentioned, the man who befriended the tramp. He was a powerfully-built man, and he took the disease in a severe form; and, being a man of strong constitution, it took a good long time. The nursing of him was a very dirty business, and the I

nurses who had it to do got inoculated with small-pox. The fact of their being inoculated was seen by the wounds and symptoms that followed it.

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1848. In the case of one of them at least it was merely a passing
A inconvenience?—The girl did not go to bed.

1849. But still, undoubtedly she had small-pox?—Oh, undoubtedly. The other girl got a slight attack of septecæmia blood poisoning; that is over and above the small-pox.

Cross-examined by Mr. UPJOHN.

B 1850. The building was not built, you say, for more than 40 patients?—No, it was not.

1851. You have been able to get your 40 or 36 in by putting them a little closer?—That is so.

C 1852. And you have been able to do that because you have been lucky in only having mild cases there?—Yes, and also by drafting our convalescents rather earlier away. We had a considerable amount at Bagthorpe, and we put our non-infectious convalescents there in order to allow for acute patients.

D 1853. I am afraid I must ask you a question or two about your previous experience. How long have you been the Medical Officer of Nottingham?—Since 1889.

1854. That is some 14 or 15 years?—Yes, that is so.

1855. During that time how many outbreaks have you had there?—I had to do with about four.

E 1856. Can you tell me the total number of cases of outbreaks, with the dates of them?—Yes, you will find it in the Report.

1857. Your experience begins in 1889?—It does not begin then, because I had to do with cases in Nottingham when I first began to practice there.

F 1858. Did you practice then in Nottingham?—No, not there. I was there, but I held an appointment outside the town before I was Medical Officer.

G 1859. What are these figures taken from?—They are taken for the Notification of Clauses Act, and have been since 1882—since the private Act.

1860. In 1882 then you had 446 known cases, and the 8·7 is in relation, I suppose, to the population—the percentage?—No, that is the ratio of cases to deaths.

H 1861. The comparisons of the first and second columns?—It means the death in 8·7.

1863. Then taking 446 cases in 1882 we can see the figures for

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- the rest of the time. Have you anything which shows from what part of the city the different cases came?—I am afraid I cannot go into that now. I can speak of the recent outbreak from memory.
1863. Do you say four outbreaks?—I mean four within my own time. I have had to deal with the 1888 outbreak, 59 cases, 1893 and 1894, and the other one can hardly be spoken of—three in 1895. A
1864. Then you say nothing as to any of the cases before 1888?—No.
1865. Then I need only ask you about 1888 and subsequently. In 1888 you had 59 cases. Where was the small-pox hospital located then?—At Bagthorpe, two miles and five furlongs from the present hospital. B
1866. Then the garden hospital as it was called in Woodborough Road was abandoned for small-pox before that time, was it not?—Yes, it was abandoned before that time and was pulled down. C
1867. Then we may put that out of consideration for the purpose of your evidence?—It was used for a short time within my time. We used it for various purposes.
1868. But not for small-pox?—But not for small-pox.
1869. Then in 1888 the hospital at Bagthorpe is fairly close to Dr. Wray's hospital, is it not?—Yes, it is within half a mile. D
1870. You have got the workhouse infirmary close to it?—Yes, and all the buildings attached to the workhouse—the infirmary, isolation wards, and the like, are all upon the same site.
1871. Except and beyond that, I see His Majesty's prison is at a little distance?—There are many isolated cottages in the neighbourhood, if you look down Arnold Road towards Bestwood. E
1872. Do you mind saying up or down?—We will say west.
1873. Then you have to go some distance before you get to anything like a populous district?—Yes, you do. F
1874. So far as regards the workhouse; how long has that been open, a couple of years?—I think not a couple of years.
1875. It was not there at the time of this outbreak, in 1888?—Oh, no, it is only recent.
1876. This century?—Yes. G
1877. Then the same was true of the infirmary?—The infirmary is part of the workhouse.
1878. It has been there the same time?—The same time. In fact it is hardly complete yet; all the details of construction are not yet finished. H
1879. Then His Majesty's prison; how long has that been there?—Twelve years.
1880. As long as that?—As long as that; I should think 10 or 12 years.

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1881. Can you give us any information as to the population within the quarter-mile zone or the half-mile zone?—That is a question I have not gone into at all. I have been more interested in seeing whether there was any spread of disease round the

A hospital?

1882. If there was no population, I suppose there would be no dwellings?—There are several isolated dwellings, and there is the prison, as you say.

1883. There was no prison in 1888?—No.

B 1884. Was there a prison in 1893?—Yes, certainly.

1885. In the prisons they usually re-vaccinate, do they not?—No, they cannot re-vaccinate, I think, except by special order. I fancy not. I cannot speak to that positively, but I know it from visiting the prison, as I have continually to in my position as a

C medical officer. They have to get the consent of the short-term people before they re-vaccinate.

1886. Perhaps I ought to have said they usually persuade the people?—Yes.

D 1887. As a matter of fact they do get them re-vaccinated in most cases?—There is a large number of prisoners at the present time unvaccinated, and I have noted it and made complaint of it. I should say—of course I do not want to interfere in making observations of this kind—that when prisoners develop disease within the prisons, as they occasionally do, and as they have once or twice

E from infected districts of Nottingham, the Home Office send them to us, and under the circumstances I beg respectfully to protest against the want of protection given us.

1888. You do your best to protest against the want of protection?—I do.

F 1889. And as a rule successfully?—As a rule successfully.

1890. You have not quoted any statistics as to the ages of the people in the prison, I suppose?—I have had them at the time. I have not got them here. There is a mass of stuff for the current year.

G 1891. Would the bulk of them be 35 years of age?—Unfortunately, no. The bulk of them would be younger than that.

H Mr. UPJOHN : My Lord, I was asking before closing my case about these books that have been put in as part of the evidence of the gentlemen who wrote them. I suppose they ought to be marked. I am afraid I did not take the precaution of having them marked.

Mr. Justice FARWELL : They are all marked, I think, except

February 12, 1904 the epidemiological papers ; but if there is any doubt about it your
 Dr. P. Boobyer. respective clients can agree it.

Mr. UPJOHN : The books and papers produced by the Witness, we do not want to have those marked, do we, Mr. Macmorran ?

Mr. MACMORRAN : Oh, no, certainly not. A

1892. Mr. UPJOHN : May I draw your attention to your preface or introduction on page 4, which is about the first table. I see you say that there in the last paragraph but one : " In the early part of the current year the nucleus of a temporary small-pox hospital, in the shape of a 20-bed wooden ward block with nurses' room and discharging block, was erected at the northern extremity of Bulwell Forest." You call it there a 20-bed block ?—Yes. B

1893. That is this building ?—That is this building.

1894. " But it is hardly necessary to add that this cannot be considered an adequate provision for a city of the size and character of Nottingham." That is quite true, is it not ?—It is true that I wrote that, certainly. It is the official report to the Local Government Board. C

1895. It goes on to state that is a true statement of your opinion ?—It is so, but I should like to amplify my answer, if I may. D

1896. Certainly ?—In coming to that decision to erect this hospital on the present site and on the lines with which we are acquainted, the Heath Committee were guided by the experience of the past 24 years as to the needs of Nottingham upon this matter. For 24 years there had not been the necessity for a larger number of beds than here provided. They said in building a small-pox hospital they did not want to spend more money than could be reasonably justified, and they said as they had never wanted more than from 20 to 30 in 24 years, it was hardly likely they were going to want it now. They expected, with reasonable care and industry, we should be able to get over most epidemics. We usually have been, and I hope to be similarly successful in the present case. That is the explanation of the fact that this hospital is not larger than you find it. E

1897. You probably agree with what Dr. McVail said this morning, that the usual plan, and proper plan was to provide a certain accommodation, and then in time of stress when your epidemic comes, to have a place on which you could make your provision ?—That is so. F

1898. I asked you that question because of the book before me with regard to the cases in 1888, 1893, and 1894, and I am looking at the table at page 65. You had not at that time got in your mind any question of your hospital acting as a disseminator of disease, or G

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any question of this theory of aerial convection, of which we have heard so much. You had not got that in your mind at that time?—I knew of the theory; we all read Dr. Power's papers, and the reports to the Local Government Board.

A 1899. You were not making any experiments in Nottingham for the purpose of finding anything out?—No, we were not justified in doing so.

B 1900. No information was quoted to you at the time?—We had got our eyes open, because we all know that in certain types of small-pox there is an incidence liability of small-pox spreading immediately through the atmosphere.

1901. There is incidence liability of that?—Yes, there is.

C 1902. You do not, of course, dispute the facts which are mentioned in very many reports to the Local Government Board as to what has happened in other places?—Oh, no.

1903. Nor do I understand you from your last answer to dispute the inference made from them?—As to the spreading through the atmosphere?

D 1904. I am not asking about any theory at all?—I do not understand what you mean.

1905. I will try to make it clear. I am simply putting the fact. You do not dispute that a small-pox hospital does act as a centre from which infection is disseminated?—If it is badly administered, certainly it does.

E 1906. You put it simply as a question of bad administration?—I do.

F 1907. This was ascertained with regard to all, or all but one of the Metropolitan Asylums Board's hospitals in London. Do you suggest bad administration in each case there?—Some laxity of administration I should think. It has come to my knowledge frequently that patients will get some beer, for instance into a hospital, over the fence. That is an explanation. Very often it is extremely difficult to control the movements of adult patients, and to make people amenable who are only there by the accident of infection. They do not like the control, and do not like to abandon the habits they practice at home.

G 1908. When you give me that as the reason for giving me a negative answer, I want to point out that it is a good reason for giving me an affirmative answer. I am not putting to you that it is by reason of any aerial convection that the hospital acts in this manner. I am putting to you that it is because there is the hospital. You have said, and Sir Samuel Johnson says in one of the letters I read this morning, that it is practically impossible to restrain these grown up people whom you assemble together?—Oh, it is not impos-

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sible. We have had the very worst class of people ; we have been able to deal with them, and we have restrained them.

1909. I thought you said just now it was impossible?—No, it is very difficult, I say.

1910. And you put the instance of beer coming over the fence?—Yes. A

1911. I suggest to you that shows that, if you want to minimise the danger to the public and to the people living around, you should select your hospital site remote from a public thoroughfare?—I do not altogether agree with that. I have often discussed it, and I have found that hospitals the sites of which are extremely isolated, are more susceptible to communication with the outside than those, for instance, built in a thoroughfare like this, which is patrolled by the police. People cannot take the same liberty with a place like ours as they can with a place like that of the Duke of St. Albans, near by where they get into a copse and hide. B

1912. Where they escape you mean?—No. The people get to a remote spot where you cannot hear anything. C

1913. There I agree with you?—Ours is “a city set on a hill which cannot be hid,” and I never knew such espionage as we are subjected to. It is extremely amazing ; but it only illustrates the difficulty people would have in communicating with the interior. D

1914. You have got 1,000 feet frontage along the main road?—Roughly, yes.

1915. Then there are some hundreds of feet of frontage to the back road leading to the pumping station?—It is not a road ; it is a path, a private path. E

1916. I did not intend to put a high road upon you ; a path to which there is open access to the high road?—Yes, that is it.

1917. A footpath. We have heard people go along it and turn up by the colliery, and they are able to look over your fence?—Yes, I think they have done so. It has been brought to our notice. F

1918. You have heard of incidents of that kind?—Oh yes, I have.

1919. You probably agree with me, I think, that in consequence of what was ascertained with regard to the London hospitals they were all removed from beyond the metropolis?—I believe that was cause and effect, yes. It was the conclusion of the Local Government Board. G

Mr. UPJOHN : With regard to those six cases as to which Dr. Wray considers that they were infected from his hospital at Basford. I do not know whether that is sufficiently close to be worth while pursuing. H

The WITNESS: If I may be allowed to say so, there could not be any reasonable doubt in the minds of people who heard their statement as to whether they acquired the infection.

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A 1920. How do you know?—These were two men working at the pit with undetected small-pox and it was not until we had visited the house that we found it out. They had small-pox in their clothes and they worked in their clothes in the pit and these people went to the public house at Bulwell. I think it only a fair thing to say that they caught it there.

B 1921. Mr. Wray thinks it is only a fair inference. Do you say they lived close to his hospital?—They were not his patients.

C 1922. And they showed the infection after he took in some malignant cases in August?—I do not agree with you. His cases came in the end of May or June 1st and the cases were nearly all convalescent.

1923. He gives us the dates on which the malignant cases came in?—I do not think I had a malignant case at the time. That is a form of small-pox from which people do not recover. I do not think there was any case of malignant small-pox there at that time.

D 1924. It is not worth pursuing. I will go to another point. Can you tell me in what months these figures were taken?—I have it in the diary; I think it was the early part of January.

E 1925. I suggest to you with regard to the stream that that shows a stream that looks rather more artistic than the situation would justify, because it is a stream containing a large amount of sewage and a still larger amount of deposit; but I do not think that the photograph could be said to misrepresent matters at all seriously. There is a 20-foot stream there at the back.

F 1926. Just look at that one. I do not know whether you have ever seen that before. (Handing photograph)?—I should bring the same charge against those that you have, undoubtedly, foreshortened the place intervening between the outer fence and the building.

1927. You cannot avoid it, I suppose, in a photograph?—No, I know how that was done.

G 1928. Subject to that observation, I suggest to you those photographs are quite a correct representation of the old place like it is now?—Yes, I believe this was taken from the top of a conveyance. I do not know what it was exactly. It minimises the degree of obstruction of the fence.

H 1929. It was taken from a cart, and, of course, that does appear to diminish the distance?—Yes.

1930. Subject to that, those photographs are correct?—Yes, it was taken with a larger lens than ours, that is all.

Mr. UPJOHN: I do not think we need have the photographs

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marked unless my learned friends want it. We all understand each other, and we do not want to have too much trouble in the matter.

1931. May I take it that one matter which influenced you and the committee very much was that you complied, as you thought, with the conditions of the Local Government Board. Is that right? A
 —That is so. It was the only side, in fact which could approach the requirements of the Local Government Board.

1932. I am not quite sure about your figures, which you say shall be a compliance with the conditions of the Local Government Board. You say 180 in the quarter of a mile?—Yes, those were the B
 the figures I gave some considerable time back to the department.

1933. How did you get them?—By going down; I did not do it all myself. I went round the neighbourhood and took the quarter of a mile circle, and as far as possible estimated the number of the C
 people living there.

1934. You did not go round yourself?—Oh, yes I did, with the inspector.

1935. I see the agreed statement is 206?—191, is it not?

1936. 204, I see?—191, I think it was.

1937. You mean that in the cottages it fluctuates?—Yes, it D
 does.

1938. I quite follow that. Then you gave a figure to which I take some serious exception. I daresay I misunderstood you. You say it was 300 in the half a mile?—No, I say it was over 300.

1939. That 300 is in addition to the 180?—No, the total sum. E

1940. Then I do not quite understand this. We agreed that on September 1st, 1893, calculating the half mile in the way you proposed or desired to do, the resident population was 510?—I think the difference there would come in, as I explained in my original affidavit, which would be accounted for by the fact that I myself drew my circle F
 from the centre of the enclosure as the Local Government Board does in purporting to get at the incidence of small-pox round the hospital. I drew my circle from the centre of the enclosure. That would not, therefore, take in the Bestwood houses.

1941. You took it from the centre?—Yes, from the centre. G

1942. If you took it now from the centre of the buildings, it is admitted at 510?—Yes, 508, I believe, is our number.

1943. Of course, that neglects the people who are living in the neighbourhood, but are working elsewhere?—These deal with residents only. H

1944. If there is danger, do you deny or say that there is also danger to people working within the same distances?—I should have said that question hardly required an answer. Of course, if the people spend half a day, say 8 or 10 hours, it is as bad as sleeping I
 there.

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Dr. P. Boobbyer.

1945. It seems to me that the ways of the Local Government Board do not seem very plain, that it is rather odd to count the man who simply comes here to sleep, and when he is exposed to infection is indoors, and may or may not have his working clothes on, and not to count the person who may be working in the open for 9 or 10 hours a day?—I do not think it necessarily implies that the Local Government Board meant that 200 people within the quarter of a mile area would be the largest number they would admit, but they took the resident population within the limit of the two centres as being a fair guide to the number that they would tolerate on that area.

1946. You think 200 means the ordinary population of the zone; and then you have the normal number of workers in addition in the zone?—I think so. It almost necessarily follows that there must be, if there is an industrial population, a certain amount of movement amongst the people.

1947. When you said just now that this was the only site as to which the Corporation could comply with the conditions of the Local Government Board so far as they are really relevant, is that more with regard to the fourth site mentioned: Yes. Again I have not the figures, but they are over 1200 within the half-mile zone, and there is one very much greater objection to that site. It would have been approached through an extremely poor and narrow neighbourhood, with narrow windings at one part, and the ambulance could not have turned up it. Anybody having experience of taking patients from such a place would not like to choose a site that involved such a condition of things as that.

1948. That is the site the Town Clerk recommended, I see?—Yes, but with respect the Town Clerk is not a medical expert.

1949. With regard to that and put to you within a quarter of a mile there is only one where?—Within the quarter of the mile there are 200 people.

1950. Within the half-mile there are 275 residents, and the brickworks makes 300 people, some of whom are within the half-mile, but most of them beyond, so it is getting on for 1,200 people?—Oh yes, within the half-mile, certainly.

1951. I may take it your reason for selecting this site is that it is free from objection, and the grounds on which you answer the question that there is no danger within the quarter of a mile, and within the half-mile, is that the site complies according to your views with the conditions of the Local Government Board?—I did not suggest anything of the kind. I said one of the reasons was that it complied with the requirements of the Local Government Board. It is a matter of policy to comply with the requirements. We have had

February 12, 1904 many inspectors of the Local Government Board down at this time, and we have had inquiries made in the House of Commons.

Dr. P. Boobbyer. 1952. You know the Local Government Board did not approve of the site, did it?—My Lord, may I answer the question in my way? A

1953. Mr. Justice FARWELL: If I follow you you do not think the requirements of the Local Government Board are of any use at all, as far as I can see?—If you have not an aggregated population within a short distance of the hospital you have not the same facility of infection as there would be in a congested place. B

1954. I rather gather from you you do not consider a hospital is in any sense the cause of infection?—I do not think so, properly managed.

1955. If so it would be unnecessary that the Local Government Board should lay down such conditions?—As regards the idea of putting hospitals in congested areas there is a very great temptation to people to communicate with the outside; and the more practical experience you have of these hospitals the more you see that. In dealing with the cases of persons who form the vast majority of our patients we realise how difficult it is to rely on their co-operation. They can only be controlled effectually when they are physically controlled. There is no liability to communicate here. C
D

1956. Mr. UPJOHN: How much area is enclosed within your inner fence?—I have not estimated that area. That runs along the front. The city architect can give that better. E

1957. You told me it was 20 feet back from the front?—Yes, 20 feet.

1958. That is two-fifths of the way altogether?—51 feet odd, I think it is.

1959. Is it the same distance all the way round?—No, the inner barbed wire fence surrounds the hospital buildings at a comparatively short distance, 31 feet away in one place at the back, and a little less at the end. Then, of course, the other fence running to much greater lengths is much farther distant at the end than it is at the front. F

1960. Could you give me any idea of the area that is enclosed by this inner wire fence? G

Mr. MACMORRAN: I am told it is exactly half an acre.

1961. Mr. UPJOHN: Half an acre is enclosed, and that includes the site of the building?—That is so.

Mr. MACMORRAN : Three quarters of an acre it is.

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1962. Mr. UPJOHN : I will accept it ; three quarters including the site of the building ?— Yes.

Dr. P. Boobyer.

A 1963. That is the only space for the exercise of the convalescents and the staff ?—That is so.

B 1964. I was just going to put to you this letter of the Local Government Board. They did write to you with reference to the site that they could not consider it free from serious objection ?—On account of the proximity of Bulwell, which is three-quarters of a mile away. This was introducing into their conditions another condition.

C 1965. You see it is not merely Bulwell, because they say : “There is daily within the zone of half a mile of the site a working population of over 1,500 persons.” Now that seems to me to show that your construction of their condition is wrong, and that they intended the 200 to include the working population. They say, “I think it complies with the conditions of the memorandum to the of the resident population,” but there is a working population of over 1,500 daily within the zone ?—I think the working population would D be chiefly underground. They would be within the zone to a certain extent, but they would be underfoot. Many people going to and fro to their work have to traverse the road, and in addition there is the village of Bulwell lying within a mile of the site, so that is not the only reason. I fear they were wrongly informed when they were told E there were 1,500 working within half a mile.

1966. I think that is substantially what we have got. We have got 1,280 at the colliery, 230 at the ironworks and 45 at the forge works, besides those at the two mills and the farms and so forth ?— Yes, but I think the major part of them would be under ground.

F 1967. In fact the Metropolitan Asylums Board did object to the site ?—To that extent they did.

1968. They said it was a serious objection ?—Yes.

G 1969. Do you or do you not agree with that view ?—No. I thought the principal objection they raised was one which was altogether unjustifiable by the memorandum, because they never mentioned anything beyond the half-mile radius, and here they mention Bulwell, which is a long way beyond.

H 1970. I wanted to find out whether the reason for your approval of this site was that you believed it was in accordance with the Local Government Board's conditions as you construe them or whether you formed an independent opinion and merely had collateral regard to the conditions ?—I should think the latter if it was a matter of policy with regard to complying with the regulations of the Local Government Board.

I

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Dr. P. Boobbyer.

1971. I only want to know which it is, then I know what questions to put. You have made several answers to my learned friend, and perhaps I may just as well summarise them: "If the hospital is properly conducted—no danger to residents, no danger to persons passing along the highway, no danger to the people in the cottages or the farms or in Barrow's cottage"; and then, "I think no danger to anybody outside the enclosure." That is your view?—No, I think no danger. A

1972. All that depends upon the proper conduct of the hospital?—Yes. B

1973. Do you include in proper conduct of the hospital the maintenance of absolute isolation from the people on the other side of the fence?—I do.

1974. If that absolute isolation breaks down, your condition of a properly conducted hospital breaks down too?—It does, yes. C

1975. In your view, then, if you can maintain an isolation, there is no reason why you should move from your old hospital?—No.

1976. You have only one entrance-gate both in the outer fence and the inner fence?—One in each; that is all.

1977. Do I understand that nobody is allowed to bring in provisions except in this brougham that you have spoken of?—That is so. D

1978. Is there nobody from the outer world allowed to come in with provisions?—No.

1979. You see the evidence of a witness who was here a day or two ago, was that he said something about a cab. Did you ever go up by a cab?—No, that witness was entirely mistaken. I never go in a cab now since the hospital has got into good working order. I was allowed to buy a brougham for small-pox purposes, for visiting purposes, and the use of the hospital. I generally let the people at the hospital have it, and no private vehicle of any kind goes through the hospital gates or the enclosure. This vehicle is kept expressly for it. The witness who spoke of two persons— E

1980. We need not go into that. I accept your statement. What resident staff have you. Who is under control; what member of the staff is under control?—There is a constable who at ordinary times is the caretaker, constable and foreman of the groundmen at the general isolation hospital of the city at Bagthorpe. He was put in there during the small-pox outbreak because he was thought a trustworthy officer. F

1981. I only want the fact who is the head man controlling the arrangements and preserving its perfect isolation. Is that the man?—That is the constable. G

1982. He is a police constable?—He is made a constable for this special purpose. H

Mr. MACMORRAN : He is made a constable under the statute —a district constable.

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1983. Mr. UPJOHN : What wages does he get a week?—I really forget for the moment.

A Mr. MACMORRAN : We are going to call him.

1984. Mr. UPJOHN : You do not know?—I think about £2 a week.

1985. And then, of course, under him in that sense, are the nurses?—That is so.

B 1986. How many nurses?—Two night and two day.

1987. I suppose the nurses have a time outside this three-quarters of an acre for themselves, do not they?—Yes, they are allowed to go out after washing and changing their clothes. They are not allowed out more than one can help.

C 1988. I suppose each nurse has her time off every day?—Yes.

1989. A couple of hours?—Yes, if she desires it she can go out for a couple of hours.

D 1990. Under the condition of changing her dress?—Yes, and bathing.

1991. Each nurse will do that day and night?—Yes.

1992. And that is the whole of the staff?—That is the whole of the staff.

E 1993. Now with regard to the washing clothes and destroying the clothing or bandages that have to be destroyed, and so forth. Who does that?—The constable. Under special directions all infected material within the hospital is burnt in the ward fires, every material too large to dispose of in that way is burnt in a little brick fireplace at the rear of the hospital. Beds, for instance, we burn beds there, but the dirty clothes are fastened up in a bag, and placed in one of the ambulances and taken down to the yard.

1994. To which yard?—A place called the yard adjoining the section where the contacts are taken away.

G 1995. That is the old hospital?—Yes; nothing is washed in the enclosure, except, it may be, a few pocket-handkerchiefs.

1996. Whereabouts does the constable sleep?—In a little separate building at the rear, a like annexe to the hospital.

1997. The discharge house?—No; that is where the nurses sleep.

H 1998. In quite a separate building, is it?—Quite a separate building.

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—
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1999. I have only got two buildings—the main building and the discharge building?—You have a little larger building there, you will see the other building; it is connected by a roofed pathway in the rear of the hospital.

2000. Mr. Justice FARWELL: Is it usual to do washing on the premises?—Yes, my Lord, but these buildings are so incomplete. A

2001. Is it proposed eventually you should do it there?—Yes, eventually we shall do it there.

2002. There is a certain risk, is there not?—I think not, my Lord. It goes with the ambulance and there is no more risk in taking material like that than in taking patients. The Committee are not disposed to spend money upon the place in that way at present. B

2003. Mr. UPJOHN: You had contemplated making the place complete?—Of course, we should prefer to do the washing as your Lordship says on the ground. C

2004. Barrow's Cottage is only a couple of yards I think from the enclosure?—That is so.

2005. I see the water closet belonging to this house is only a yard from the enclosure?—That is so. D

2006. Do you think there is absolutely no risk there?—I should not have put the gate there, but I do not see any harm is likely to occur if we manage the interior of the enclosure properly, and I should like to say we are doing our best to manage it most strictly in accordance with what we consider the necessary thing to do. E

2007. Nobody disputes in this case you are not doing your duty?—No; but I simply said that in order to answer certain statements which have been made by witnesses on the other side, that laxity has existed at times as to the management.

2008. How often do you personally go to the hospital?—Always twice a week and sometimes more—frequently more. F

2009. You have mentioned an assistant, and it is only fair to ask how often he goes?—Every morning he goes there. I have two, a skilled assistant who is a skilled expert in small-pox matters. He goes every morning, and he is the officer in charge. G

2010. How long does he stay there?—Sometimes half an hour, sometimes a couple of hours; it depends upon the class of cases and the treatment. It is a variable time.

Re-examined by Mr. MACMORRAN.

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Dr. P. Boobbyer.

2011. Only one or two questions. You have been asked, with reference to the Bagthorpe Hospital. Formerly you treated your small-pox patients there?—We did.

A 2012. For how many years was there alongside the small-pox wards a hospital for infectious diseases generally?—There were three considerable outbreaks, in which the cases were treated in a pavilion only 60 feet distant from one in which scarlet fever cases were taken.

B Mr. UPJOHN : I think my friend ought to have put that particular case in chief.

2013. Mr. MACMORRAN : You asked whether there were any within the quarter or half a mile radius. I want to show all along there was this infectious diseases hospital close by, and the workhouse came afterwards?—It did.

C 2014. In fact the workhouse was recently, in 1902?—Yes.

Mr. UPJOHN : The witness did not say anything about the hospital.

The WITNESS : You did not ask me, you asked me about the district outside.

D 2015. Mr. Justice FARWELL : Is one disease likely to be communicated while the other disease is on?—Oh no.

E 2016. Mr. MACMORRAN : For many years while this place was in use there was the other place with other diseases?—Scarlet fever, typhoid, diphtheria, exceptional measles, and whooping cough, and we never had a single case that brought infection, and we ascribed it, as I said just now, to strict management. If people were found doing anything wrong they were discharged, and there was a notice of discharge put up.

F 2017. Mr. MACMORRAN : You were asked about the nurses. Is washing and changing of clothes done upon every occasion?—Always.

Mr. UPJOHN : How can he know? He can only say he believes it was done.

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Dr. P. Boobyer.

Mr. Justice FARWELL: What the doctor says is that he knows those were his orders, and those were the proper instructions to give, and the proper precautions to take. I do not think you did put a specific case. If Mr. Upjohn wants to ask a question upon it I do not suppose you will object, Mr. MacMorran? A

Mr. MACMORRAN: Oh no.

Further cross-examined by Mr. UPJOHN.

2018. As to this infectious diseases hospital; there would be a good many children in there, would there not?—On two occasions I got out the number of vaccinated and unvaccinated persons, and I found that half the inmates in one ward were unvaccinated, but we could not vaccinate without their permission. Latterly we have vaccinated them, but at the earlier times they would not allow us to. B

2019. When do you mean the earlier time?—In the earlier years we did not attempt to vaccinate them; and even if we obtained their permission we could not do it generally, because there would be a large number of people who would not see the necessity of vaccination. C

2020. I was asking you about children; but, however, as you have mentioned the vaccinated cases I will take them. When did you commence vaccinating them or getting their permission?—I think it was the last outbreak, 1893 or 1894—no, I mean the last outbreak mentioned. D

2021. One is 1893, and the other 1894?—Yes, it was not done with sufficient system really to affect the case then. We did it as a matter of duty, but it is a very difficult thing to vaccinate people in these cases. They think it is sufficiently hard that their children should have to go to the hospital at all. E

2022. Mr. Justice FARWELL: Is vaccination improving at all?—It is improving, my Lord, but it has been very bad in the past. F

2023. Mr. UPJOHN: Another point is that a large proportion of the persons with infectious diseases would be children?—That is so; yes.

2024. But then there would be a good proportion of old people?—Yes, the typhoid would be mainly adults, the diphtheria cases half and half. G

2025. Again, I put to you the great bulk of the people would be either under 15 or over 40?—I do not see why.

2026. I ask you the fact?—I do not think so.

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2027. They would be either children suffering from measles or scarlet fever?—No, in some outbreaks of scarlet fever you will find the age incidence rises.

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Dr P. Boobbyer.

A 2028. You have not any statistics?—No; occasionally we have a ward full of adults with scarlet fever; I do not know why; sometimes you get a ward full of young children, and at one time that ward was full of young women—that was during one outbreak.

B 2029. There is only one other matter. In answer to my Lord you expressed an opinion that there is no immunity from small-pox germ by reason of their suffering from other diseases. I put it to you, there is a large body of opinion among medical men that persons suffering from one infectious disease are not so likely to take another? —There is a great deal of opinion perhaps but it is certainly untrue, and certainly with convalescent patient cases I have known them contract small-pox. I have not known it occur at Bagthorpe, but I have known it occur in the town. It has been often denied by many people, but it is the fact.

(Adjourned till to-morrow morning at 10.30.)

In the High Court of Justice.
CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,
Friday, February 12th, 1904

BEFORE
MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

v.

THE MAYOR, ALDERMEN AND
CITIZENS OF THE CITY OF
NOTTINGHAM.

MINUTES OF EVIDENCE.

THIRD DAY.

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Town Clerk,
Nottingham.

J. P. Lee

In the High Court of Justice.

CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,

Saturday, 13th February, 1904.

BEFORE

MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL

AND OTHERS

v.

**THE MAYOR, ALDERMEN & CITIZENS
OF THE CITY OF NOTTINGHAM.**

[*Transcript from the Shorthand Notes of BARNETT & BARRETT, 40, Chancery Lane, W.C., and H. H. TOLCHER & Co., 93 and 94, Chancery Lane, W.C.*]

Counsel for the Plaintiffs: Mr. UPJOHN, K.C., and Mr. A. LLEWELYN DAVIES (instructed by Messrs. HIND and ROBINSON, Agents for Messrs. WELLS & HIND, Nottingham).

Counsel for the Defendants: Mr. ASQUITH, K.C., M.P.; Mr. MACMORRAN, K.C., and Mr. R. J. PARKER (instructed by Messrs. SHARPE, PARKER, PRITCHARDS, BARHAM & LAWFORD, Agents for Sir SAMUEL GEORGE JOHNSON, Town Clerk, Nottingham).

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EVIDENCE—Fourth Day.

Dr. F. R. Mutch.

Dr. FORBES ROBERTSON MUTCH, sworn.

Cross-examined by Mr. R. J. PARKER.

2030. You are a Doctor of Medicine and surgeon to the Samaritan Hospital at Nottingham?—Yes. A
2031. And you are also an alderman?—Yes.
2032. And chairman of the health committee of that city?—Yes.
2033. How long have you been a member of the health committee?—About 16 years. B
2034. How long chairman?—About five.
2035. Have you had experience of small-pox in Nottingham?—Yes, since 1879.
2036. During the whole of that period have you been in touch with the isolation hospitals and the places from time to time used for isolating small-pox patients?—Yes, I have. C
2037. Both in Windsor street and elsewhere?—Yes.
2038. Now just tell me, from your experience, have you ever found any cause to believe that the isolation hospitals or wards themselves, formed the source or nucleus of infection?—Such has not been the case in Nottingham so far as I am aware. D
2039. I think you were chairman of this health committee when the site of the present hospital in Bulwell Forest was selected?—Yes.
2040. That site was selected, I think, out of four sites which were chosen as possible sites by the Town Clerk of Nottingham?—Yes, that is so. E
2041. Did you and your committee carefully inspect these sites prior to selecting them?—Yes, we did.
2042. May I take it they came to the conclusion that the one you ultimately selected at Bulwell Forest was the most suitable for the purpose?—It was the most suitable for the purpose on account of the wide thoroughfare. F
2043. In choosing that site your committee had before them the

regulations or recommendations given by the Local Government Board?—Yes. February 13, 1904

2044. In choosing it they kept those regulations in view?—Yes. Dr. F. R. Mutch.
 A One great factor was the fact that this was approached by a wide unbuilt-upon thoroughfare for about 3 and 2½ miles from the city, and that there was no likelihood of it being built on upon any future occasion, because the prison occupies a large area, and then there is the workhouse, and there is the isolation hospital at Bagthorp, and the waterworks belonging to the corporation.
- B 2045. May I ask you, in your opinion, supposing this hospital is used, as it has been used I understand for the last two months, at any rate, for about 35 to 40 patients, is there any danger to persons passing along the road?—I do not think there is the least.
- C 2046. Do you consider there is any practical danger for the persons who reside in the houses or cottages in the neighbourhood?—I do not think so.
2047. Does that apply not only to the quarter of a mile limit, but the half mile limit?—Oh yes.
2048. Both?—Yes, both.
- D 2049. What is your opinion with regard to the workers that come in and work in the neighbourhood. Do you think they run any material risk?—Very little, if any.

Cross-examined by Mr. URJOHN.

- E 2050. Do I understand, Dr. Mutch, your view to be that there is not the least danger to residents, and very little, if any, to the workers?—Yes.
- F 2051. Can you explain why there should be more risk to the workers than to the residents. Can you explain to my Lord the ground of your opinion that there is greater risk to the workers than to the residents?—I do not think I stated that there was any material risk to the workers.
2052. “Very little, if any,” you said?—Yes, “if any.”
2053. There may be some, but very little?—So little that I do not think there is any.
- G 2054. But in the case of residents, you are sure there is not the least?—Not so far as my experience of Nottingham is concerned.
2055. Then let us have it distinct. You think there is a little more to the residents than to the workers?—No, I do not think so.
- H 2056. Now let us see the ground of your opinion. I am afraid I was not attending as I ought to have been just now, and I did not

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 Dr. F. R. Mutch. — Yes.

2057. Has your experience been as a private practitioner or in a public capacity?—As a private practitioner, and in a public capacity as well, because when small-pox was prevalent in Windsor Street about 1880, when we had some 400 cases in that hospital between November, I think, and June, I have visited that hospital every day. A

2057A. Was Windsor Street the then hospital?—Yes, it was. B

2057B. Do I understand you to say that you visited the hospital or that you visited the street?—No, I visited the hospital.

2058. At all events, the result of some of your experience is that a small-pox hospital is not a nucleus or source of infection?—None at all. C

2059. Then you entirely disagree with this, “When a sufficient number of cases in the acute stages are connected together in one building on a small area of ground the hospital becomes a centre of infection to the surrounding neighbourhood”?—I do disagree with that so far as my experience is concerned. D

2060. And any suggestion that there ought to be a radius of, say a quarter of a mile or 400 yards or anything of that sort, of land unbuilt upon between the hospital and the outside world is absolutely unnecessary?—I think so, although it may be a safeguard.

2061. But why is a safeguard wanted?—So far as I am concerned, it is not. E

2062. Let us be logical, because you make me cross-examine you at such length. You do not think a safeguard is wanted?—I do not think so.

2063. That being so, why did you move your hospital further in the city where it was?—Why did we move it? F

2064. Yes?—Because the place was tumbling down and it was a question with the Corporation then as to whether they ought to erect a permanent structure for all infectious diseases on a larger area or retain that land in the centre of the town which was more valuable for building purposes. G

2065. I do not quite follow that, but perhaps it is not material. Then of course the view that you have expressed mainly influenced you in the selection of this site?—Yes.

2066. You are the chairman of the health committee?—Yes. H

2067. And you are a member of the legal profession?—No, the medical.

2068. I have no doubt your opinion carried the day?—No, I am afraid not, because there are other men on the committee.

2069. At all events, your opinion had very great weight?—I do not know that it had so much as one would expect.

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Dr. F. R. Mutch.

Mr. Justice FARWELL: The witness is modest.

2070. Mr. UPJOHN: You had the regulations of the Local Government Board in view?—Yes.

2071. Would those regulations in your view be absolutely unnecessary?—I think so, as far as my experience is concerned; but it is only wise I think, that a corporation should be on friendly terms with the Board.

2072. I follow that, as Dr. Bobbyer put it yesterday, there was no other reason for observing the regulations in your opinion?—No, not from my experience of Nottingham.

2073. There is only one other matter I want to put to you. You told my Lord that this area that you selected was $2\frac{1}{2}$ miles from the city over a wide unbuilt upon ground?—Three miles from the city.

2074. Two and a half or three miles of ground which was unbuilt upon?—It was unbuilt upon.

2075. But you go through part of Bulwell, do you not?—You must from the other side, but the main traffic comes along the high-road from all parts of the city.

2076. It would carry part of Bulwell, would it not?—Basford and Bulwell Forest.

2077. The suggestion I was intending to convey is not correct. This particular road keeps on the east of the Bulwell parish?—Yes.

2078. Are you right in saying that is the main approach from the city?—Yes, that is the main approach of both our hospitals.

2079. I am asking you about the other hospital. What I am putting to you is that the main approach from the city to this existing and new hospital is through a road through Bulwell. I can tell you the name of the street—of the main street?—That is, it would be only for Bulwell patients, and not for Bestwood patients.

2080. Surely if you are going from this part up *here* you would not come up *here* and go along *there*. *Here* is your old hospital?—Yes.

2081. Here is the populous part of the city down here?—Yes.

2082. The site I suggest to you is through Bulwell, *so*. Do you say you go *so* and *so* and *so* (pointing on the map)?—Yes, that is *so*.

2083. It strikes me as very extraordinary that you take two sides of a triangle instead of taking the third?—Yes.

2084. It is rather a rough sandy track, I am told—very different

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to the road through Bulwell, which is a made road?—No, it is really the best road from the town.

Re-examined by Mr. MACMORRAN.

2085. I do not know whether you can see the road at this distance; *that* is the hospital, is it not?—Yes. A

2086. The way to the hospital follows *this* road, does it not?—Yes, that is it.

2087. The main traffic out of Nottingham goes *that* way, does it not?—Yes.

2088. The general traffic?—The general traffic. B

2089. But along this road, until you get right down to the south there are few houses indeed?—Very few indeed, and I might mention Bulwell Forest occupies a large distance, and the Corporation cannot possibly sell that land or allow that land to be built upon, so that it would still remain an open highway. C

Mr. Justice FARWELL: Why did you communicate with the Local Government Board on this particular occasion? You were not borrowing money?—No.

2090. On general principles, or why?—We had their rules.

2091. As far as I follow it, the gentlemen on your side, Mr. Upjohn, say the regulations are unnecessary and useless, and the gentlemen on the other side, at all events, say they are not sufficient?—I am speaking of my experience of Nottingham. We did not go to the Local Government Board at all; we simply looked at the regulations, and the inspectors of the Local Government Board came down to Nottingham with regard to certain other matters and this matter was mentioned to them in an informal way, not that we wished to have their opinion upon the hospital at all. D E

Dr. H. J. Neilson

Dr. HENRY JOHN NEILSON, sworn.

Examined by Mr. MACMORRAN.

2092. You are a Doctor of Medicine and Master of Surgery of the University of Glasgow and Public Vaccinator and Medical Officer of the Bulwell District, Nottingham Union?—Yes. F

2093. Were you formerly house surgeon of the Glasgow Infirmary?—Yes. February 13, 1904

2094. Have you had an extensive practice in the neighbourhood of Bulwell all round about and beyond the hospital site?—I have. Dr. H. J. Neilson

A 2095. What experience have you had in connection with small-pox during the last 10 years?—I have had the experience of three outbreaks of small-pox.

2096. In Nottingham?—In Nottingham in the borough. I had two in Nottingham and one outside the borough.

B 2097. You had an outbreak of small-pox, had you not, in January, 1903, at Basford Hospital. You were the medical officer there?—Yes.

2098. And you treated that in the isolation ward there?—Yes, I did.

C 2099. How far is that ward from the main workhouse hospital?—About 13 yards.

2100. Is that a general hospital?—It was the hospital of the workhouse, the hospital building forming a separate block to the workhouse.

D 2101. Is it a general hospital for all cases?—It is.

2102. How far were you away from a street?—About 50 yards.

2103. A street with any population—a considerable population?—A population of about 500 people.

E 2104. How many in population do you suppose there were within the quarter of a mile radius?—Oh, several thousands—2,000 at least.

2105. How long did that outbreak continue?—Two months.

2106. How many patients had you?—Nine.

F 2107. During the time of that outbreak, or after it, had you any other case of small-pox in the workhouse or neighbourhood?—None.

2108. There was an outbreak of small-pox, was there not, at Hucknall Torkard last year?—Yes.

G 2109. Where is that?—Two or three miles further out beyond this Bulwell hospital, and practically in the same direction.

2110. How many cases had you under treatment there?—61 cases altogether.

H 2111. Were you in charge of the isolation hospital?—I was in charge of that hospital from the end of March. I treated all the cases but one, who died before I was appointed.

2112. Did you make an investigation as far as it was possible in every case as to the source of the infection?—I did.

2113. Were you able to trace one that could be attributed to the hospital?—I was not.

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2114. What was the population in the neighbourhood of the hospital?—Within a quarter of a mile of that hospital practically nothing.

2115. Within half a mile?—Within the half mile more than 600. A

2116. Was there a highway passing in front of you?—Yes,

2117. How close?—Several hundred yards.

2118. Were you the medical officer of the infectious diseases hospital of the Basford Rural Council?—Yes, and medical attendant.

2119. That is the hospital nearest the city?—Yes. B

2120. Called the Samaritan hospital.

2121. How many patients had you there?—48.

2122. Is there a large population in the neighbourhood of that? Yes, a considerable population.

2123. How many do you suppose within the half mile radius?— C
Several thousands.

2124. Did any case occur within the half mile radius?—No, none that I am aware of. There were cases that occurred of small pox within the half-mile.

2125. Can you tell me how many?—I think six, but I know four D
different houses.

2126. Did you investigate the cause of those cases?—I did.

Mr. UPJOHN: I thought we had agreed to differ about these, E
Mr. Macmorrان.

Mr. MACMORRAN: Very well, then I will not go into it.

Mr. Justice FARWELL: Am I to take it then that I have the two opinions of the gentlemen. I have it that they came from the hospital once a day. Before they said they did not come once a day. If this gentleman can trace them, ask him the question. F

Mr. MACMORRAN: I understand Mr. Wray said that he did not know how these cases arose, and this gentleman traced them.

2127. Did you trace those cases?—Yes.

2128. Were you able to trace the cause of infection in all these houses?—Yes. G

2129. In anyone of them could you trace them to the hospital?—Not at all.

2130. And you have the details of them if necessary?—I have, yes.

2131. Are you acquainted with the Bulwell Hospital site? February 13, 1904

—Yes.

2132. And the road adjoining?—Yes.

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A 2133. What is the nature of the traffic on the road?—Beyond the traffic between Bulwell and the Ironworks Collieries there is very little traffic beyond that.

2134. In your judgment is there any risk to persons walking along that road to and fro from their work by reason of the presence of the hospital?—No.

B 2135. In your opinion is the hospital, if properly managed, a source of danger to persons in the immediate neighbourhood of it?—No, I do not think so.

Cross-examined by Mr. UPJOHN.

C 2136. That is a big “if,” is it not?—I beg your pardon, which “if”?

2137. If properly managed?—I do not think it is a very big “if.”

2138. You do not really?—No, I do not.

D 2139. Do you hold that in a district such as this it is practical to prevent personal communication between those inside the hospital and those outside the hospital?—I think so.

2140. And to avoid accidents?—I do not know that anyone can avoid accidents anywhere.

E 2141. Tell me if you agree to this: “The question whether small-pox will spread through an area to a distance is, from a practical point of view, one of very prime importance on account of the ignorance and foolishness of patients and their friends, and the evitable infallibility of members of the hospital.” Are they fallible?—Oh, yes.

F 2142. “It is very difficult, at least it would seem so, to prevent a highly infectious disorder, such as small-pox, being spread round the hospital by these means, at any rate, spreading even does occur.” Do you agree with that?—That a spreading often does occur.

G 2143. Do you agree with that?—That a spreading often does occur?

2144. Do you agree it is very difficult to prevent small-pox spreading round the hospital by means of the folly, ignorance and so forth?—I do not believe it in a properly managed hospital.

H 2145. When he speaks “Of ignorance and folly of patients,” that is with patients there, and when you speak of fallibility you admit there is fallibility even on the part of doctors?—I think

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- proper management prevents the foolish people indulging in the folly.
2146. Then you think all that can be prevented?—I do.
2147. Do you agree with this, "In selecting, therefore, a site for the isolation of this district it is well, on these grounds, you choose one at some distance from the polluted area." Do you agree with that?—I think it is better without a densely populated area, if you can get it, certainly. A
2148. But not of very great importance?—No, not of very great importance.
2149. Then also you differ from the view mentioned there?— I do. B
2150. Probably you are acquainted with the name of Dr. Thomas Dixon Savill?—Yes.
2151. He was a very great authority on the subject?—Yes.
2152. He was employed by the Royal Commission on Vaccination to examine into and report on a great number of cases?—I believe so. C
2158. All of which are printed in the Blue Book, also printed in the final report?—I believe so.
2154. Do you mind my seeing that. I have not seen it? D
- Mr. UPJOHN : Yes, certainly ; it is at page 69.
2155. Do you agree with this : "There is no contagion so strong on shore and none that operates at so great a distance as that of small-pox" ?—I agree with it, yes.
2156. That is Sir Thomas Watson?—It is more than Sir Thomas Watson ; it is every medical man. E
2157. It is his language?—Yes.
- Mr. Justice FARWELL : Will you let me have that?
- Mr. UPJOHN : It is at page 11 of Dr. McVail's little book. Your Lordship will see it is just above the middle of the page. F
2158. Mr. Justice FARWELL ; Do I understand you agree with that, "None that operates at so great a distance" ?—I agree with that. As regards contagion, I know of thousands of miles where there has been contagion.
2159. You mean dirty rags or anything of that sort?—Yes. G
2160. Mr. UPJOHN: Do you think that is what Dr. Watson meant?—I do not know what he meant.

2161. Do you agree that: "small-pox has an almost unique power of propagating itself by unexpected and untraceable methods, availing itself of the kind of penetrating subtlety of all the varied means of communication known to mankind?—No, I do not agree with that.

A 2162. Then you differ with the Members of the Royal Commission on Hospitals?—I disagree with that statement.

2163. It is at page 22 in roman numerals?—That is the Royal Hospital Commissions Report.

B 2164. May I take it that subject to this condition of proper management it is not material whether you put your hospital near a highway or not?—I do not think so.

C 2165. I ought to have read this—it was omitted from the extract; this is an answer by Sir William Jenner: "It is well known that small-pox, though generally susceptible of control, by careful regulations rigidly enforced, has an almost unique power of propagating," and so forth.

Mr. Justice FARWELL: Is that the same book I saw before, that Mr. Macmorran handed up?

D Mr. UPJOHN: No, my Lord, you have not had it before. It will go on the shorthand notes, and therefore, I need not trouble your Lordship with it.

2166. Then it is subject to this condition of proper management?—Yes.

E 2167. The proximity of a high road is immaterial?—Yes.

2168. It is immaterial whether it is a high road with plenty of traffic or a quiet road?—Just so.

2169. And immaterial whether it is in a populous district or a sparsely populous district?—Yes.

F 2170. Then you take the view like Dr. Mutch, that the Local Government Board regulations are really unnecessary?—I think they are unnecessary.

G 2171. Perhaps I can first mention what I lay stress upon, "the frontage of the 1,000 feet to the high road from Bulwell to Westwood and then the frontage for some 100 feet to that private road the way at the back leading to the pumping station"—you know that road?—It is not a road, it is a path to the pumping station; in no sense could you call it a road.

H 2172. Very well, a path to the hospital grounds abutting upon that path for some hundreds of feet as far as Barrow's cottage?—Yes, as far as Barrow's cottage.

2173. You consider the frontage of the road in front and the

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path at the back, and the extent of the site, the 4 acres we have heard of, in your opinion is quite enough practically to prevent communication between the hospital and the outer world?—I do.

2174. You consider it is a good site?—Yes.

2175. Now I want to ask you one or two questions about the three cases you have mentioned to my Lord. You have had personal experience of three outbreaks, and you have mentioned each of them?—Yes. A

2176. Now the first that you mentioned was in January of last year at the Bradford Workhouse?—No, that was in January, 1893. B

2177. What position did you occupy at that time?—Medical officer of the workhouse.

2178. How many patients did you have suffering from small-pox?—Nine.

2179. Yes, you told us that, and that it lasted for a couple of months?—Yes. C

2180. How many patients at a time?—The infection was introduced by a tramp in the workhouse; and practically everyone in the dormitory where he slept the first night were infected—that is to say, 15 days after that, and then there was not another one. D

2181. Fifteen days afterwards you had the eight on your hands?—Fifteen days afterwards the rash came out on the others.

2182. Have you got any notes of the cases?—No, not with me. I can remember them.

2183. Were they bad cases?—No. E

2184. The ward in which you treated them, you say, was 13 yards from the workhouse?—That is so.

2185. Can you give me any figures as to the proportion of vaccinated and unvaccinated persons in the workhouse?—The proportion of vaccinated is very small indeed, because I tried to get them vaccinated and could not. I implored them to be vaccinated, but they would not be. F

2186. They would not be then, but had they been?—The majority would have been vaccinated in infancy but the majority had passed that stage when vaccination gives them great protection. G

2187. What ages were the majority?—In the workhouse hospital the majority would be over 40.

2188. Mr. Justice FARWELL: I think the doctors are agreed as to this, that vaccination in infancy does not give you immunity through life, but if you are attacked you will probably have it more mildly; re-vaccination in middle age does give you immunity?—Practical immunity after say 40 years. H

2189. It does not follow you will not have a severe attack?—No.

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2190. Does re-vaccination give you immunity?—Not absolutely ; it has to be done more than twice to give absolute immunity.

A 2191. Can you get absolute immunity by a third vaccination?—Yes, you can vaccinate yourself to the point that you will not take it at all.

2192. Mr. UPJOHN ; I hope I am safe, because I have been vaccinated three times, and the last two years ago?—I wish everyone was as sensible in Nottingham.

B 2193. Mr. Justice FARWELL : Is that agreed amongst doctors?—It is practically agreed amongst doctors that vaccination will absolutely last for a number of years—how long will depend on the person.

C 2194. Mr. UPJOHN : With regard to the other people in the workhouse whom you have been endeavouring to induce them to submit to re-vaccination—you see this is a long time ago, 11 years ago—have you any memoranda showing whether you inquired as to their previous vaccile history?—I do not require any note of it, because I always do that as a medical officer of the workhouse as they come in.

D 2195. Have you any notes to show what was their previous history?—I have none.

2196. Are you able from recollection to say?—Quite.

2197. What was the history?—The majority of them had been vaccinated in infancy.

E 2198. But as to any re-vaccination?—There were practically very few who had been re-vaccinated, one or two had been, but the number was quite infinitesimal.

2199. That is your recollection?—My distinct recollection.

F 2200. Had any of them suffered from previous attack of small-pox?—A few had.

2201. That would make them immune at all events for a longish time?—It would make them immune just the same as vaccination, but not any more.

G 2202. And at all events it makes them immune for some years?—It has practically the same effect as efficient vaccination.

2203. You were the resident medical officer at the workhouse, hospital, or infirmary?—I was not resident medical officer.

2204. But medical officer?—Yes.

H 2205. Now then as to the street you have mentioned adjoining. If any cases had happened they would have come within your cognizance?—They were bound to, because my practice is all round that workhouse and in that district.

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2206. You had not a position then and the notifications had not to be sent to you?—Yes, they had. The Notification Act was in force before I went to Nottingham.

2207. At that time were you medical officer of health?—I never was. A

2208. I thought you had to have the notification?—No. Dr. Bobbyer was the medical officer of health.

2209. I am afraid that we are at cross purposes. In the year 1903, supposing a case had happened in this adjoining street why would you have had a notification of it?—Because it is in the Bulwell part of the city of Nottingham, and every case had to be notified to the medical officer of health, and every inhabitant of Nottingham would have known and certainly every medical man. B

2210. If there had been a case of small-pox in Nottingham at that time, and there was not?—Certainly not at all. C

2211. It would not have come to you officially, but it would have have been part of your business to find out?—Certainly.

2212. The second case you mentioned was an outbreak at Hucknall?—Yes.

2213. Hucknall is a small way off?—Yes, about three miles from Bulwell. D

2214. You were in charge of the hospital there—what hospital was that?—The Rushcliffe Isolation Hospital for small-pox.

2215. That hospital is situated west, south-west of the town and Bulwell is not it?—I have got the map showing exactly where it is situate. E

2216. I think that is right. I have looked at it on the map—call it south-west?—No, it is not the south-west: it is at most due west so far as I can remember.

2217. Call it rather more west than south-west?—I will call it what it is. I have got it actually here with the directions shown. F

Mr. Justice FARWELL: Does it matter, Mr. Upjohn?

2218. Mr. UPJOHN: I was only going to put this. I had evidence in chief to show that this was a case of hospital infection. I have got a proof, but I did not think it worth while to go into it. I put it to you that the prevailing wind blowing from the Rushcliffe Hospital towards Bulwell town——?—The prevailing wind is the west wind. It lies to the westward; it lies between south-west and north-west. G

2219. I put it to you that there were a good many cases from people at Hucknall within half a mile of the hospital?—There was not a single case within half a mile of the hospital. H

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2220. In a certain number of cases the source of infection could not be traced. Dr. Jones was the medical officer of health, was not he?—Yes.

A 2221. He came to the conclusion that in a certain number of cases the hospital was the source of infection?—No, I have never heard him express such an opinion, but I have heard him express one to the contrary.

B 2222. How long did that outbreak last. You told my friend there were 61 cases—how long did it last?—It lasted from the 20th of February.

2223. Say from February to June?—Yes, the last case admitted was on the 30th of June.

2224. That would be about five months. So that you would not have so many as 20 in at a time?—Yes, we had 25 in at one time.

C 2225. Then the rest of the time you must have had a good many under 20?—Yes, but not very often until it was dying out were they under 20.

2226. Now then the Basford Hospital, is that the one we heard about from Dr. Wray?—It is.

D 2227. There were six cases there which occurred 15 days after the hospital had been overcrowded with acute cases; perhaps you do not know that?—I do know. I am the only one who does know, because I had charge of them.

E 2228. You had charge of this hospital?—I had charge of that hospital.

2229. Now I put it to you, these cases were notified on the 7th of July?—Yes.

F 2230. Now then, 15 days before that time, that is to say, beginning about the 17th of June, there were a number of admissions to the hospital?—Yes.

2231. And those turned out rather bad cases, did not they?—No, one or two of them were bad cases.

2232. Then all the rest in this outbreak treated at that hospital were mild cases?—Not all the rest, there was the usual proportion.

G There were acute cases and mild cases; but at no time could the hospital be said to have been overcrowded by acute cases.

2233. You did your best to trace the six cases to it?—Yes.

2234. Tell me how you set to work in one?—Take the case of Mary Ann Jackson, Park Lane—that was one that was attributed.

H 2235. Take the most doubtful one?—There are none of them doubtful in my opinion; they are all clearly traceable.

2236. Then take Mary Ann?—John Jackson worked at the Broxtowe pit, with Peter Dudley, a patient of mine. He had

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modified small-pox and worked all the time with modified small-pox at the colliery with John Jackson and he was only discovered to have modified small-pox when he had infected his wife, whom I also attended.

2237. They worked in the same colliery?—They worked in the same colliery. A

2238. Were they in the same shaft?—I cannot tell you that, but the manager of the colliery thought it sufficiently bad to consider them under that infection because he stopped every man going down the colliery until he was examined by a medical man. B

2239. That was very prudent, but you cannot tell my Lord whether the two men were in the same shaft or not?—I cannot.

2240. And of course it follows that you cannot say whether they were in the same gang and whether they worked in the same place?—I know they worked in the same pit. They went down the same shaft and they came up and down in the same gang. C

2241. And a few hundreds of others, too?—Yes.

2242. And were there any other cases?—Yes.

2243. In the colliery?—Yes.

2244. At that time?—At that time. D

Mr. UPJOHN : I do not think it will be worth while to go into those.

Re-examined by Mr. MACMORRAN.

2245. Did you say that Mary Ann Jackson's husband himself was infected?—We believed he was. I cannot say personally because I never saw him, but his wife informed me that he had spots on his forehead which were very suspicious; but Dudley I know had, because I saw him myself. E

2246. You have been asked a question founded on this report, Appendix 5 to the final report of the Royal Commission on vaccination. The question which was put to you was founded on a passage on page 69. Now I find on that page it is stated, putting it shortly, that there are three possible ways of spreading small-pox; first, by immediate spread—from one person to another—that is to say, immediate contact; secondly, mediate spread by means of a third person; and thirdly, the possibility of convection by the aerial currents. Now will you listen to this—it is on the third point: “The poison of small-pox is believed in all cases to be conveyed through the air, and to find entrance to the respiratory passages, but in what follows aerial convection will be taken to mean infection through the air at a distance of 20 yards and upwards. It has seemed H

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- to me unnecessary, for practical purposes, to consider on the present occasion the dissemination of small-pox infection through the air within that distance (as mentioned on page 3). Material is not forthcoming for the narrower investigation, but it will be profitable to inquire into the truth of the allegation that the infection of small-pox was, in the Warrington epidemic, 1872, carried beyond that distance. Aerial diffusion and aerial convection are held to be synonymous." And then: "Finally, before presenting such facts as have been collected, permit me to mention two points—first, the question whether small-pox will spread through the air to a distance, is, from a practical point of view, not one of very prime importance, since, on account of the ignorance and foolishness of patients and their friends and the inevitable human fallibility of members of the staff of a hospital, it is very difficult, at least it would seem so, to prevent a highly infectious disorder such as small-pox being spread around a hospital by these means. At any rate such spread often does occur. In selecting therefore a site for the isolation of this disease it is well, on these grounds, to choose one at some distance from a densely populated area"—rendering it unnecessary to assume any such hypothesis.

Mr. UPJOHN: I quite agree with it, and it will save the trouble of putting it to the witness.

2247. Mr. MACMORRAN: In dealing with the question of the proximity of one person to another within 20 yards, that comes very close up to actual contact?—Yes.

2248. For instance, persons, one infected and one not, in a large room such as the ward of a hospital—in that case the unaffected person might receive the infection there?—He might.

2249. But speaking now of a room—of persons in a room—that would be direct contact practically, would not it?—It might not be direct contact, but in an enclosed room they might infect one another.

Mr. Justice FARWELL: Can you tell me when the Metropolitan Hospitals were moved out of London?

- Mr. UPJOHN: In 1886. If your Lordship has got that first document we handed up—the print of the 1880-1 report—on page 3, in Roman numerals, your Lordship will see that Dr. Power gives the dates and the results.

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MR. EDWARD WILLIAM HOPE, sworn.

Examined by Mr. MACMORRAN.

2250. Are you a Doctor of Medicine and Doctor of Science?—
Yes.

2251. Professor of Health in the Victoria University of Man- **A**
chester for the last ten years?—Yes.

2252. And now in the University of Liverpool?—Yes.

2253. Have you been medical officer of health for the city and
port of Liverpool for the last ten years?—I have.

2254. Were you previously deputy medical officer for 11 years? **B**
—Yes.

2255. And during the latter part of that period were you
physician to the Parkhill Small-pox Hospital?—I was.

2256. Have you had an intimate acquaintance with all outbreaks **C**
of small-pox in Liverpool?—Yes, my official position necessitates
that.

2257. And have you been intimately connected with the admin-
istration of small-pox hospitals in Liverpool?—Yes, I exercise a
general supervision over their administration.

2258. Is Liverpool peculiarly exposed to importations of small- **D**
pox?—It is.

2259. Chiefly I suppose through the port?—Through the port,
and also overland by tramps, and so on.

2260. You have found it in ships coming from all quarters?—
Yes, in fact, I may say that small-pox in any important port abroad **E**
ultimately means small-pox being brought to the port of Liverpool.
In the case of the last five vessels from Smyrna, for example, each one
brought a case of small-pox.

2261. Have you found the same in vessels coming from other **F**
countries?—From America, Spain, Italy; in fact, wherever small-
pox is.

2262. I suppose you remove all those patients to a small-pox
hospital and deal with them there?—Yes, every case is removed to a
hospital.

2263. Will you tell us how many small-pox hospitals you have in **G**
Liverpool?—We have three establishments in Liverpool for the
reception of cases of small-pox and we have also one hospital on the
Cheshire side of the Mersey which we can use if we find it expedient
for shore-borne cases of small-pox.

2264. I want you to direct your attention first of all to the city **H**
hospital—those in the city. Now, the three places where you get

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small-pox, I think are—first the Fazakerley Hospital in the north-west?—Yes, may I be allowed to indicate those as it may save (indicating on map to his Lordship). The red dots indicate the small-pox in the last 15 months—during the last outbreak, This

A Netherfield Road Hospital, around which so much small-pox arose, has not been used for small-pox for 25 years, and during the time that some if not all these cases arose there was no small-pox treated in that hospital at all, the whole of it being treated either in Priory Road or in Fazakerley.

B 2265. Taking the case of the Park Hill Hospital is that the largest of the three?—It is, that is an institution with 400 beds which during the prolonged absence of small-pox from the city, or when there were but a few cases, has been used for cases other than small-pox—it has not been allowed to stand idle.

C 2266. During the last two years what is the maximum number of cases you had in the hospital?—About 230, I think, is the figure.

D 2267. Do you know what the population is within the quarter of a mile radius of that hospital?—Yes, the population, I should think, is several hundreds—certainly over 200 within the quarter-mile radius.

2268. It has a site, I think, of 10 acres?—Hardly that now; it was originally, but the site is one which does not belong to the corporation and some of it has recently been taken by the dock board, to whom it does belong, for business purposes.

E 2269. How close are the hospital buildings, or some of them, to a public thoroughfare?—Some of them are quite close to a very frequently used footway—a large and important footway leading down to the docks.

F 2270. Is it used by the workmen?—Yes, used by all sorts of people, workmen chiefly, but all sorts of people have access to that way.

2271. Are you able to say from your own experience whether there has been any case of small-pox in the neighbourhood of that hospital which you can trace to the presence of the hospital itself?—

G No, none. I may say that extreme pains are taken in Liverpool to trace the connection and origin of cases of small-pox, the object of doing it being of course to suppress outbreaks of small-pox, and by patient, continuous, and painstaking observations these cases are traced out.

H 2272. So that in the very great majority, if not in all cases, you can trace the sources of the infection?—In a very large proportion. I should like to hand in a diagram showing how these are traced.

2273. I should like you to do so. Let his Lordship see it, and just explain. (Same handed.)

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The WITNESS: Perhaps I may explain to your Lordship. (The witness went on to the bench.) This is an illustration in a case of small-pox arising in Lansdown Street from a person whose illness was not notified to the authorities as it should have been. The whole of these were traced in sequence on the dates indicated. As to their residences, some were near to the infected house, some were more remotely distant, but there was in each case a direct communication traceable. I sketched this one diagram, but I have others if it is desired to put them in. A

2274. But for the fact that you were able to trace that, these cases that were in the neighbourhood of the hospital might have been set down to the hospital?—Those cases were not in the immediate neighbourhood of the hospital used for small-pox, but I have no doubt that if it had been by chance used for small-pox it would have been quoted as a case of small-pox infection. B C

2275. Taking these cases which you have investigated, and cases which arose near a hospital, are you able to set out the like results?—Yes, in a large number of cases, but of course not in all.

Mr. Justice FARWELL: Do you want to put this report in generally? D

Mr. MACMORRAN: No, it is only to illustrate the evidence.

The WITNESS: There are maps also in this report which bear upon the subject.

2276. Perhaps you would let me see one of these maps?—There is a series of maps showing the commencement and the extension of the outbreak in dots. Each case is marked with a little dot; they are, my Lord, diagrammatic maps—they are not perfect and complete maps like the large one, but they sufficiently indicate for all purposes the progress of the disease from time to time. This report, I need hardly say, includes matter other than that bearing upon this enquiry, but still it has an indirect bearing. E F

2277. May I take it that these cases which are shown by the red dots on the map, were investigated under your direction?—Every case. G

2278. Were you able to trace a single one of those cases to the presence of the hospital?—No.

Mr. Justice FARWELL: You must identify these somehow, if you are going to prove them. Perhaps you had better put in the

book containing them all, and strike out the report as not relevant. For convenience, I will have the book marked (book put in and marked E. W. H. 1.)

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A 2279. Mr. MACMORRAN : You have spoken up to the present time of the Park Hill Hospital?—Yes.

2280. With regard to the Priory Road Hospital, I think that is the centre one of the three?—Yes.

2281. How many beds does that provide accommodation for?—That is a very small institution with 43 beds.

B 2282. Do you know what the population within the quarter-mile is there?—I should think it is about 200.

Mr. UPJOHN : Have you anything to find that out? Our cases have all been enumerated.

C 2283. Mr. MACMORRAN : I do not suppose you have had a census taken of them?—Yes, we have had a census taken of those, but you may take it from me as a fact that it is upward of 200 within the quarter of a mile radius.

2284. Can you say what it is within the half-mile?—I should say it is upwards of 600. You see by the numbers of streets on the map.

D 2285. Is there any public roadway near that institution?—Yes, there is.

2286. Within what distance?—There is a roadway running practically by the boundary wall of the institution.

E 2287. How far are the buildings from the roadway?—About 40 feet, I should think.

2288. Have you ever found a case of small-pox in the neighbourhood of the hospital which you could attribute to the hospital?—We found them in the neighbourhood of that hospital, but they are not attributable to the hospital.

F 2289. You trace them to other causes?—Yes, I trace them to other causes.

2290. With regard to the hospital on the north-west, the Fazakerley Hospital, how many beds does that hold?—That contains 180 beds for small-pox.

G 2291. Has that been fully occupied for some time?—Yes, for a considerable time.

2292. For about how long?—Over six months or more.

2293. Have you any idea of the population within the quarter mile radius there?—Probably below 200 there, or slightly below.

H 2294. And within the half-mile?—Six hundred, but building is

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going on in the district, and the time is near when there will be more than 600.

2295. Have you had cases of small pox in the neighbourhood of that hospital?—Not very near to it, not in any way traceable to anything from the hospital. A

2296. May I ask you this. You have the control of this hospital?—I have the general supervision, but they each have their visiting physicians and their resident medical officers.

2297. But you have the general supervision?—Yes.

2298. And may I take it from you that your administration is very strict?—It is. We endeavour to make it as perfect as we can, having regard to the enormous interests at stake. B

2299. In the case of a small-pox hospital, which is administered in the way you are able to do them here, do you think there is any appreciable danger to the health of the persons in the immediate neighbourhood. C

Mr. UPJOHN : By "here" do you mean Nottingham?

Mr. MACMORRAN : No. I said "in the case of an administration such as he had here"—meaning Liverpool.

2300. Have you seen the hospital at Bulwell?—Yes. D

2301. Do you regard the site as a suitable one?—Yes.

2302. If that hospital is properly administered do you think there will be any appreciable risk to any persons outside the boundaries of the hospital fence?—No, I think there will be no risk if the hospital is properly and rigidly administered, but unless it is so, wherever it is placed it will be a source of trouble. E

2303. Even if it were placed in Dartmoor, if persons—friends of patients and the like—were allowed to go in without supervision, they could carry disease anywhere?—Precisely so, certainly.

2304. You are acquainted with what I may call the recommendations of the Local Government Board with regard to small-pox hospitals?—I am. F

2305. Do you think that those recommendations as to population for instance, are really unnecessary?—I think they are unnecessarily stringent. G

2306. I think at one time in your career you did believe in the possibility of the aerial convection of disease?—Certainly. At that time these very careful investigations, systematic inquiries, the following up of every individual case, frequent visits to the house day after day, finding every person who had been to the house, every person with whom the infected person came into contact as far as H

possible in employment, and from the shops he went to, and so forth—those methods had never been followed out at that time. February 13, 1904

2307. Now you have followed these cases out, what is your opinion?—My opinion now is, as I said before, that these regulations are unnecessarily stringent, provided the administration of the hospital is what it ought to be. Mr. E. W. Hope.

2308. I meant to ask you what your opinion was with regard to the supposed aerial convection of disease?—I think there is a very great deal of misapprehension upon that point of aerial convection as I have heard it defined, the carrying of particles of disease for long distances—a quarter of a mile or half a mile or more—I think there is absolutely no evidence whatever to justify such an assumption.

Cross-examined by Mr. UPJOHN.

2309. You have just told my learned friend that in your opinion the Bulwell site is a suitable one?—Yes.

2310. And that there is no risk to the neighbourhood if the hospital is properly and rigidly administered?—Yes.

2311. By that do you wish my Lord to understand that you make no criticism whatever on the site—that you think that it is free from criticism?—As a site, yes, I think it is free from criticism.

2312. Now in respect to its proximity to the highway in front, you know it is 50 feet away from the hospital?—Yes.

2313. You do not consider that that is a point of criticism?—Always bearing in mind the question of administration and the structural arrangements and means to prevent communication between those within and those without.

2314. Just let me understand. Then in your judgment may a hospital site be selected apart from and quite in disregard to the Local Government rules, on the assumption that there will be such a rigid administration as to render compliance with those regulations quite unnecessary?—I am not prepared to say that, I should like to see the individual hospital and see what its surroundings are.

2315. Take the Bulwell site?—Yes.

2316. Of course, there they say they have complied with the Local Government Board rules; therefore my question perhaps does not quite apply to them, but do you say that on the assumption of a rigid administration that that is free from criticism?—I should say so.

2317.—And you make no criticism in respect of the proximity to the main road in front?—I think the means taken to ensure safety will prove to be adequate.

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2318. You think that it is quite safe and adequate from the point of view of the protection of the public to rely upon the taking and carrying out of these means?—Under those circumstances.

2319. What circumstances?—Under the circumstances of their inner fencing and their general supervision. A

2319A. You are quite satisfied with it?—Yes.

2319B. It entirely answers to what, in your idea, a hospital site should be?—Well, I say that it is a site which is a safe site. To ask me if it is entirely ideal is quite another thing.

2319C. I do not?—Practically that is what you ask. B

2319D. It is a perfectly safe site about which you make no criticism. Do you agree with this that in selecting your site you should bear in mind the advisability and even the necessity of minimising all means of communication between those within the hospital premises and the outer world?—I quite agree. C

2319E. That is the object to be borne in mind?—Yes.

2319F. Now, bearing that in mind, I want to ask you if you agree with this: "Small-pox.—Some circumstances in connection with the isolation of cases of small-pox call for observation"?—Yes.

2319G. This is page 65; published yesterday, was not it?—Well, it is recently published. D

2319H. A well-known text book?—It will be.

2319I. "Buchanan & Hope's Handbook of Public Health." First of all, you set out the regulations of the Local Government Board?—Those, of course, you will understand. E

2319J. Please, Dr. Hope, you shall explain presently. You set out the regulations of the Local Government Board?—Certainly.

2320. You make no observation upon them, and then you say: "Small-pox.—Some circumstances in connection with the isolation of cases of small-pox call for observation. Site.—The site of the hospital is an important matter. This should be away from dwellings, highways, public footways and places of public resort, and it should be altogether independent in its administration of the hospital for other forms of infectious diseases. These requirements make the selection of a site somewhat difficult, more especially as a large area of vacant ground is necessary fronting it approximately with a radius of 400 yards or upwards. It must be remembered also that means must be taken to prevent this land"—that is, the radius of 400 yards—"from being encroached upon by buildings or dwellings in future." Now, is that right or wrong?—That is right. Will you kindly read on? F

2321. Yes, I will; you shall have every indulgence; directly. Does the Bulwell hospital comply with that?—Practically. G

2322. What?—Practically with those recommendations.

2323. "A radius of 400 yards, and means must be taken to H

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prevent the land from being encroached upon by buildings or dwellings in future?"—This land, I understand, cannot be encroached upon by buildings or dwellings in future.

A 2324. Perhaps you went into the box under some misapprehension as to the site. Let Dr. Hope have a copy, that is the fairest way. This is what we have agreed to: "Distances and residency"—column 1 you see property; in column 2, distance from fence; column 3, distances from the building itself; and column 4, the number of residents. Do you think, under the circumstances of this site, distances should be taken from the fence or the building?—Oh, from the building.

B 2325. And suppose the site is afterwards used, as it probably would be in an epidemic—you agree with that, that the site would be almost sure to be used in an epidemic?—Certainly, for hospital purposes.

C 2326. But the hospital grounds?—There might be an extension.

2327. There would be what Dr. Boobbyer calls this nucleus?—I understand his arrangement was to fall back if necessary upon the old establishment for convalescents.

D 2328. Did his report to his own corporation say that this was a nucleus?—I should see no objection to an additional pavilion and the necessary administrative offices being put there.

E 2329. Then that would rather shift the centre of your circle. Barrow Cottage is four yards from the fence and 48 from the building. Those buildings on the opposite side of the way are 73 from the fence and 183 from the building—that is where they sell milk. Then the Moorbridge Cottages. Do you remember noticing those as you drove up?—Yes.

F 2330. There are 22 of them with 99 residents, 235 yards for the building. Now the cottages by the glue works—did you go to those?—Yes.

G 2331. Twenty-three inhabitants, 157 yards from the building. The railway cottages with 18 inhabitants, 255 yards from the building. If you will just glance down you will see that within 400 yards from the building there are 204 people in 10 or a dozen different buildings. Does that comply with the observations in your book?—Certainly, most entirely. All that this amounts to is that I have put there, as you say, the recommendations of the Local Government Board. This is merely a text-book for students. Various opinions are put forward in it, and this book is intended for students whom we desire to familiarize with the views of other experts and with their examiners. Dr. McVail is one of them.

Mr. Justice FARWELL: It is perfectly clear that all you say is

February 13, 1904 that to meet the Local Government Board requirements makes it difficult.
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Mr. UPJOHN : With respect, my Lord, I think we have parted with the requirements, it is under the head of "sites away from dwellings, highways," and so forth. A

2332. Mr. Justice FARWELL : It follows immediately after, and these requirements I understand you to say, refer to the Local Government Board requirements?—The object is to put forward everything.

Mr. UPJOHN : But Dr. Hope, so far as the requirements, it is 400 yards instead of 200. That is the very next question which I was going to put to you—400 yards. B

Mr. Justice FARWELL : Where is the 400 yards ?

2333. Mr. UPJOHN : I beg your Lordship's pardon, I was looking at the 200 people. This is an expression of your own views. This should be away, isolated from dwellings, highways, public foot-paths, and places of public resort. Are they your views or not?—Those are my views, but you see I am very careful in refraining from binding myself to accept the view of the Local Government Board. C

2334. I am not putting the views of the Local Government Board in the passage I have read, I am putting your views. Does your Lordship notice this, that after the reference to the Local Government Board regulations comes this : "Introductory observations." Then : "Some cases in connection with the isolations of small-pox call for observation." Then that is the observation which witness makes. That represents your view of what should be attended to in selecting a site?—Exactly, it must be attended to, and the matters must be taken in conjunction with all others. D

2335. Then it goes on : "It is unlikely that small-pox can be conveyed long distances, say a quarter of a mile or a mile by aerial convection." That is your view?—Certainly. E

2336. Short of a quarter of a mile it can be conveyed?—Not at all. F

2337. Do not you say so here?—No, I am writing there a text book for students. G

2338. Not expressing your views?—Well, I do not know, perhaps it would be as well.

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Mr. Justice FARWELL : If you read the rest of the sentence it looks as though it was a compromise of the two things. Dr. Buchanan was a gentleman who advocates aerial convection and this gentleman does not. For him I think you must read the first part of the sentence and for the other the other part.

A

Mr. UPJOHN : It is not that Dr. Buchanan, my Lord. It is Dr. R. J. M. Buchanan.

2339. It is not the Local Government Board doctor?—Not at all.

Mr. Justice FARWELL : I thought this was a compromise between the two.

B

2340. Mr. UPJOHN : No, my Lord. I do not follow it for the moment. "It is unlikely that small-pox could be conveyed long distances, say a quarter of a mile to a mile by aerial convection" ?—The cases of recent years originally supposed to have been caused by aerial convection after they have been investigated have been proved to be due to contact—direct or indirect—direct with persons or things.

C

2341. I put it you here express the opinion that it is beyond the quarter of a mile that you say it is unlikely to be conveyed by aerial convection; and the quarter of a mile, you see, is substantially the same as the radius of 400 yards that you have just mentioned?—The 400 yards is, of course, substantially a quarter of a mile, but the object in retaining that is to put both sides of the question to the students; and you will find if you turn to the preface that he is referred to other sources of information if he desires to follow out these subjects more closely.

D

2342. I daresay it is an introductory discussion altogether?—It is very introductory.

E

2343. Your name is on the title page, and it is quite accurate, of course, and such a thing I suppose as the studious man should know?—I think it is important that the studious man should know what it is that the Local Government Board recommends as well as what I recommend, or as well as what my own views are.

F

2334. Your own views are that the site should be away from dwellings, highways, and so forth?—That is the view that I put forward as expressed in the orders of the Local Government Board.

2345. Oh! Dr. Hope?—Allow me to finish my answer.

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2346. Look at your own book, page 658, you are not stating it accurately you know?—Yes, I think I am.

Mr. Justice FARWELL: I do not know that you need labour this; he is only saying his book says the Local Government Board requirements are useless. He sets his view out and says as to the site that is an important element. He sets it out as one of the things to be regarded. A

Mr. UPJOHN: The regulations, for instance, do not say anything about being away from highways.

Mr. Justice FARWELL: Very well, after all the doctor is here on his oath to give his own opinion. It is no use elaborating on everything from the text books. We shall never get on if I am to go through all the text books. B

2347. Mr. UPJOHN: At all events I may take it that truly represents your views?—What I have said represents my views. C

2348. And not what you have read?—What I have written represents other people's views as well as mine. I think in every text book you will find repetitions and repetitions ad nauseam.

2349. Now, of course I am dealing simply with your own views, You agree that the virus of small-pox is unique in its powers of communication?—Yes, it is perhaps the most intense. D

2350. Perhaps you will agree with these recommendations of the Hospital Commissioners that "whether there is anything in the doctrine of atmospheric dissemination or not, yet in selecting a hospital site, both personal intercommunication and almost atmospheric dissemination ought to be with the utmost care guarded against"?—I take everything into consideration when selecting any hospital site, whether for small-pox or anything else. E

2351. What I am putting to you is that it is not true or right, having regard to the people who are outside the hospital to include this atmospheric dissemination?—I think you may include that absolutely in a site such as this. F

2352. You may in this case, but not in other cases?—I am not prepared to commit myself to other cases. I should like to know the circumstances connected with it. G

2353. You will not accept the general principle I have mentioned that "both personal communication and almost atmospheric dissemination ought to be with the utmost care guarded against"?—I attach no importance to atmospheric communication here.

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A 2354. Then you differ from Sir William Jenner, Sir William Gull, Sir James Rixon Bennett and Dr. Simon, afterwards Sir William Simon?—Exactly in the same way as one would differ from those eminent gentlemen on questions of malaria. Science has advanced since 1865.

2355. This is the 1882 Report of the Hospital Commission. I suggest to you that since that date science has advanced in the direction of finding it “to be more and more necessary to guard against atmospheric dissemination”?—There I differ.

B 2356. Then perhaps this would be a convenient time for asking you about specific cases. The learning commenced long before, but the collection of specific cases commenced in the year 1873?—What specific case?

C 2357. Specific cases as to the infection of the area round the hospital—by the hospital?—No doubt long before that circumstances may have arisen which gave colour to the view that the hospital was the source of infection.

2358. Did the collection of evidence commence at least by that time?—Probably.

D 2359. I will put to you the Glasgow case, which is reported in the 8th Appendix to the final report of the Royal Commission on Vaccination?—Yes, I should like to say a word or two about the Glasgow district, if I may.

E 2360. You shall have every opportunity, but I want first of all to get it my way. That is when it commenced?—I do not deny it. I cannot say from personal knowledge.

2361. It comes down to the year 1902?—Very likely, Dr. Buchanan being the last, I think.

F 2362. No, Dr. Thresh’s examination at Purfleet and the Romford Rural District being the last?—Yes, I will take it that is so.

2363. So far as the record of the causes which are mentioned go, is it not the fact that they all show an infection of the area round the hospital—from the hospital?—No.

G 2364. That is the conclusion drawn from the cases?—The conclusions, in my opinion, are not warranted by the facts.

H 2365. We will take one case. Let us take the Purfleet case affected by the ships on the opposite side of the river. I want you to tell me why the conclusions drawn by Dr. Thresh, and also by Dr. Buchanan (those are the gentlemen who reported on it for the Local Government Board), are not warranted by the facts?—Because there were other sources of infection, and unless you can exclude this you must exclude every other source of infection.

I 2366. Have you any personal knowledge whatever of that case, the small-pox ship infective case?—No, but I have no reason to doubt what I have heard read.

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2367. Were you in Court when Dr. Thresh proved what he had done for the purpose of investigating every case that had arisen at Bulwell?—No, I was not in Court.

2368. Perhaps his evidence has been reported to you?—No; but I have heard Dr. Thresh, and I know his views pretty well. A

2369. I am not asking you his views, but his facts?—Yes, his facts.

2370. Give me not general statements, but facts. Why do you say the conclusion drawn by the two gentlemen in the case was not warranted by the facts?—It is a matter of opinion in my case, based as I told you upon what I have heard from Dr. Thresh and others; from Dr. Newsholme and other sources. B

2371. What you have heard?—What I have heard is that there were other channels of infection.

2372. Now I want you to tell me. Dr. Thresh said he had followed up every channel. What channels are there?—Channels of communication by boats—from the ship to the shore. C

2373. What have you heard about that?—I have heard that there was that communication. It is merely what I have heard.

2374. From whom have you heard that?—I have heard that from Dr. Thresh. D

2375. That is extraordinary. His evidence in this Court was that in connection with the 1901-2 outbreak the Metropolitan Board gave strict orders preventing any such communicating, and so far as he could find out no such communication took place?—I have no doubt they gave all those orders, but they were disregarded. I have not myself investigated this, but I have seen it referred to in the proceedings of the Society of the Medical Officers of Health. I have seen that there was this communication. E

2376. Mind, communication, how many cases?—Between the ships and the shore and by land also. F

2377. How many have you heard where communication took place?—I do not know how often it took place. I understand it was fairly frequent.

2378. Is it upon that that you have based your opinion that there is no evidence in support of the view in that case?—I think that is a sufficient one if it be true, but it is not a case where I have myself investigated. G

2379. Are you aware in that particular outbreak that the attack rate in Purfleet was 119 per 1,000 compared with 1.1 in the county outside the Orsett Union?—I take it that it is so, and the explanation is this, that if you introduce the seeds, the germs of disease into any spot as it is shown on that map here you must expect it to extend. If you set fire to a haystack you must expect a conflagration. H I

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2380. Do you find any difficulty in stamping out the infection when it arises in such a way as you suggest?—Yes.

2381. You do find a difficulty?—Most undoubtedly, it requires the utmost vigilance and watchfulness.

A 2382. But even with vigilance and watchfulness there is a constant and continuous danger?—Yes.

2383. Is there any difficulty in stamping out the outbreak, if you are able to remove the cases?—Yes, certainly there is a difficulty.

B 2384. Do you not succeed in Liverpool in stamping out cases by removing them from Liverpool?—Yes, but not without difficulty. We spend much time and pains. You asked me about difficulty. I say we do succeed, but with difficulty.

C 2385. With difficulty you do succeed?—Yes, with sparing no pains.

2386. Do you suggest pains were not taken in the Orsett Union?—I am making no suggestion about pains in the Orsett Union. I am not in a position to judge of the situation.

D 2387. Then you are not in a position to express an opinion?—I express my opinion much as I have heard other gentlemen express theirs within the last day or two. They have expressed theirs somewhat from what they read and have heard, and I give my opinion in the same way.

E 2388. I want you to tell me where you have read that there were these many cases of communications between the ships and the foreshore in the Purfleet case?—I regret I cannot refer you to them in a moment, but I have no doubt other witnesses will. I cannot recall it.

F 2389. I suppose, from the first day you knew you were going to be examined?—Quite so; but I knew how wide a range the cross-examination would extend over.

G 2390. Now let me take the other well-known investigation—Dr. Power's investigation in connection with Fulham Hospital. Have you anything to say against his investigation?—I have precisely the same thing to say; that there is no consideration given at all to the facts as to where the initial case arises.

H 2391. Excuse me saying so, but you really speak in forgetfulness of Dr. Power's papers, where he carefully states that all possible pains were taken to trace the cause and to eliminate it?—I know that.

2392. Then, why do you say he did not do it?—Because it was not possible for one man to make the necessary careful and continuous observation for such a multitude of cases.

I 2393. He was assisted by the medical officer for the district and his staff he tells us?—Yes.

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2394. And spent the whole of his time there to make the investigation and was doing nothing else?—I am quite sure he would bring to bear the highest possible skill and tact upon the subject, and I am not in any way reflecting upon that, but what I say is that with so huge a task a very large number of people would be necessary to attack it. A

2395. You come here to say that in Liverpool around the hospital there was no case?—No, there was not.

2396. Your task seems to be a huger one than Dr. Power's, because you did not personally superintend this hospital. You gave it a general supervision only because you have other multitudinous duties at Liverpool?—That is so; but what I do is to supervise the whole of the staff which deals with the city investigation, and it is a staff entirely apart from that which administers to the hospital. B

2397. But Dr. Power was sent by the Local Government Board to give his whole time to the investigation of this particular outbreak, and his investigation extended only to one-mile radius round the hospital—round the one hospital. Why do you suggest that is beyond the power of man?—Because, notwithstanding my regard for Dr. Power's investigation, my own personal experience repeated and repeated appealed to me much more strongly. C D

2398. Then you have no reason for saying those facts were wrong or his reasoning was wrong, except your views were different?—Quite so; from the study of his own reports I came to a different conclusion than he did. That is all it ends in. E

2399. Point out the passage in his report on which you rely as justifying the statement that his facts were not properly obtained, and that therefore you dissent from his conclusions?—I take the report as a whole.

2400. You are certainly very careful, Dr. Hope, not to be pinned to anything?—How can I be pinned to a thing of that sort? F

2401. Let us go into this a little. You know under what circumstances Dr. Hope's investigations were undertaken?—Yes.

2402. "Every medical officer of health in every district in which there is a metropolitan hospital reported an excess rate in the neighbourhood of the hospital." That is so, is it not?—Yes, I believe that is so. G

2403. It is reported so to the Local Government Board?—Yes. H

2404. And the result was that Dr. Power was specially deputed by the Local Government Board to devote himself to this inquiry. That is so, is it not?—Yes, that is a matter of history.

2405. It is also a matter of history, is it not, that Dr. Power's

Power's

report led to the appointment of the Hospital Commission? February 13, 1904
—Yes.

2406. It is also the fact, is it not, that the Hospital Commission, in taking the evidence of gentlemen with views on both sides, reported this: "That the evidence which they had taken establishes"—my Lord, this is at page 16 in Roman numerals of the Hospital Commission—"the increase or decrease of mortality concurrently with the opening or closing of the hospital"—is that right?—You say "the evidence they have taken." No doubt it did, but they did not take evidence enough, or they would probably have come to another conclusion.

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2407. They did not take evidence enough you mean to say?—Yes, that is it.

2408. Then you do not agree with this at pages 19 and 20: "The broad stream of events accumulated for 10 years." This is not the report your Lordship has—"leads to the conclusion that the increase of small-pox"—I had better give the exact language, I think—"near the hospitals uniformly subject to the working is also consequent upon it." Is that right. They reiterated it was not only post hoc but also propter hoc?—I have no doubt they did report so.

2409. I have got it now, "We cannot but conclude that the increase of small-pox near these hospitals is uniformly subject to their being brought into full working, has also been consequent upon it." That is their report?—I have no doubt that report is based upon the broad stream of evidence which at that time, as I have said before, was not as accurate as it is to-day.

2410. Not as accurate as it is to-day. Now, let us see if that will bear examination. Is it not the fact that that readily led to the expulsion of small-pox hospitals from London?—Quite likely.

2411. It is the fact, is it not?—I believe so. I have not been residing in London, but I take it that it is correct. I take it from you that it is so.

2412. No, no; I am taking it from you; you know all about it; is not this part of your study and learning?—No doubt these are matters which I have read carefully and considered carefully.

2413. Is it not the fact that the result of the removal of the small-pox hospital from London was to reduce the death-rate from small-pox, including those happening in the hospitals in London, and including those happening in the hospitals outside the metropolis to a vanishing point?—No doubt, but I do not think that was post hoc and propter hoc. There, I think you must have regard to the improved vaccination.

2414. This is in 1886. What was the improved vaccination after that time. It got worse in the seventies and the early eighties.

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Mr. E. W. Hope.

The vaccinal condition of the people then was better than in the eighties and nineties, so I understand?—It was in Liverpool.

2415. You will not commit yourself to London?—No, I will not.

2416. Let me read you what Dr. Power said, and this is at page 3 in Roman numerals of the report which was reprinted in 1901: “The danger of the spread of small-pox in the neighbourhood of hospitals in which patients suffering from that disease are aggregated, which Sir Richard Thorne had in two respects found reason to suspect and which was taken from Dr. Power’s report has since been multiplied by further observation in the Fulham Hospital and by experience of epidemics of small-pox in Sheffield, Bradford, Warrington, Leicester, Gloucester and elsewhere.” Do you deny that is a true statement?—Far from it. I have not the slightest reason to doubt Sir Richard Thorne’s statement, or Dr. Buchanan.

2417. I am afraid you do not follow it. What Dr. Thorne has suspected, and what Dr. Power had proved, so far as Fulham is concerned has been proved by the experience of the epidemics at those five places named and other places?—That is their view undoubtedly.

2418. “On the other hand, in London the removal of small-pox patients to hospitals at a distance, instead of treating them at hospitals within the limit, has been followed by a remarkable diminution of the disease”?—That is a fact, no doubt.

2419. “In the years following the great epidemic of 1871 to 1875, minor epidemics occurred in London about every four years.” I put it to you that during that time London was in a better *facile* condition than it was in the nineties?—I do not know.

2420. “Since 1886, the year in which the treatment of small-pox in hospitals within the limits of the metropolis was discontinued, the London death-rate from that disease, including the deaths from small-pox of Londoners in the hospital outside, declined almost to a vanishing point,” and that is notwithstanding the conscientious objectors?—That is eminently satisfactory.

2421. Is that all you have to say about it?—I think it is eminently satisfactory.

2422. Are you aware that the result of establishing a small-pox hospital within the metropolis was to degrade the hospitals from their former position?—I believe that is so.

2423. Then there is a table at page 96 of the 1886-7 report that shows that at a glance. “Since the removal of the hospitals the districts, or, at all events some of them, Hampstead, Fulham and Hackney, have regained their former position.” That is right is it not?—Yes, I believe it is.

2424. I do not know whether you were present when Dr. Evans of Bradford gave his evidence?—No, I was not present.

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2425. Let me tell you what he says. When they opened a hospital they found—and I am not asking you to assume at present there was a cause of relation—in the district round the hospital there was an excessive incidence of attack an excessive attack rate—so much so that they opened a new hospital on the other side of the parish. When they ceased to take new cases to the old hospitals the attack rate in the district round the hospital failed and became even less than in other parts. When a fire happened at the new hospital, and they had to revert again to the old hospital, the attack rate in the district round the old hospital again rose. When they rebuilt the new hospital, and ceased to take new cases in the old hospital, the attack rate round the old hospital failed, and on each of the two cases on which they started the hospital on the other side of the town they noticed the increase of the attack rate in that locality. Can you offer to my Lord any explanation of that other than this, that the hospital does act as a focus from which disease is spread?—It appears certainly most conclusive, but I do not know the circumstances, either of situation or the administration of the hospital.

D 2426. We have seen Dr. Evans, and we know exactly what he did—that there was no mal-administration; what explanation do you offer of that remarkable occurrence?—I hope you will excuse me assuming; I should not really like to assume.

E 2427. With all respect to you, I am entitled to have your answer on that assumption. It is for my Lord to say whether there was mal-administration?—I do not suggest there was. All I say is upon the statement you have made the evidence does appear almost conclusive, but, as I say, I do not know what the administration was. I do not know the situation of the hospital, and I cannot recall it. I have been to it, perhaps, but I really cannot remember it.

2428. Mr. Justice FARWELL: I suppose it is conceivable that the moving in a hurry of patients through a fire might be more risky than the ordinary removal from a hospital?—Yes

G Mr. Justice FARWELL: I am not going to attempt to draw inferences from the doctor's views, you know, Mr. Upjohn.

2429. Are you familiar with the Sheffield case?—Merely from reading.

2430. It was carefully investigated by Dr. Barry?—Yes.

H 2431. He was sent down by the Local Government Board personally to investigate?—Yes.

2432. He was there some weeks, according to his report, I think?—Yes.

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2433. Then Dr. Buchanan revised the whole matter and expressed his opinion?—Yes, I believe so.

2434. Do you remember in that case, although during the operations of the hospital he took the 1,000 feet, the 2,000 feet, 3,000 feet and 4,000 feet, and then the rest of the borough, that in the 1,000 feet immediately round the hospital the attack rate was 36 per cent. per 1,000, the attack rate in the outside beyond the 4,000 feet was 1 per 1,000. When they removed the hospital the incidence in the area, as he calls it, round the hospital fell 90 per cent., and was actually less than the rest of the borough. Can you account for that?—I cannot account for it without some further information as to vaccination and a variety of other conditions.

2435. Do you really dissent from the general proposition that a small-pox hospital is a source of danger to the neighbourhood; I mean in face of the facts which I have put to you, and which have been proved in this Court, do you dissent from that?—Yes, I do. I think there is still some missing evidence wanting in those ancient cases.

2436. Ancient?—Fifteen years—12 years.

2437. 1902?—Which one was that?

2438. Purfleet; the Sheffield case was 1888?—I think we are entitled to give every weight to evidence which we can see for ourselves from observation in making those inquiries. There is something, as you see, on the map—the excessive attack rate round the hospital; but that hospital has never been used for small-pox.

2439. Look at the map. There are cases close, say, to the Park Hill Hospital, I think it was. Is that so?—Yes.

2440. The hospital is not marked upon it; but if you look you will see, for instance, “Harrington Dock.” You can see where that is?—It is marked on the large plan, I think.

2441. Yes, you are right. I think they are all marked?—Yes, they are all marked on the plan in every case.

2442. The Park Hill Hospital is still being used?—No, it has got no one there. We have no small-pox at present, but we had, of course, when the map was made.

2443. You are quite right to take me up?—I did not mean to do that.

2444. The Park Hill Hospital was being used for small-pox at the time of these cases. We can see some of them in the circle coloured?—Oh yes, but—

2445. Just tell me what the radii of the circles are?—The quarter mile and the half mile.

2446. Yes. Now you were going to say “but”—something?—I was going to say you see on the extreme left of the map the Fazakerley Hospital. Those cases of small-pox you refer to occurred

when this Fazakerley Hospital was being used, and prior to the use of the Park Hill Hospital. That is a point which has such an immense bearing upon it.

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A 2447. I understand you to say that the Park Hill Hospital was being used for small-pox when the cases occurred?—It was being used during part of the outbreak; the outbreak extended for about a year and three months, and during part of that time we used the Park Hill Hospital—during the latter part.

2448. For small-pox?—For small-pox.

B 2449. Can you tell me when these cases that one sees within the quarter of a mile and half a mile radius occurred?—Yes, in January.

2450. Of which year?—1903, when the hospital was opened, about a fortnight or so later.

C 2451. For small-pox?—For small-pox, and the importance of that point is this—that if we had missed one of those, and there had been an extension of small-pox, then this extension would have been attributed not to the real source but to the hospital, even if there had been but a single patient in it.

D 2452. Of course that one follows. Do you say none of the cases within the radii occurred after the hospital was opened for small-pox?—No, the disease continued in the south end of the town, coming round, as you see it left the one district and passed away over to the other.

E 2453. It originated there before the hospital was opened, and continued afterwards?—The seed was sown before the hospital was opened.

F 2454. After the opening of the hospital, was there any difference in the attack rate?—In that district there was an extension, as I have told you.

2455. Give me the figures?—I am sorry I cannot.

2456. You will find the incidence of the disease indicated on the maps?—You will see it on the last map.

2457. That does not give any dates. Please follow my question.

G I want to know the figures of the attack rate, within the two centres the quarter-mile and half-mile centres after your hospital was opened, and the attack rate before the hospital was opened, so that I can compare them?—I am sorry I cannot give you the figures all I can do is to repeat this and—

H 2458. No, I want them now—

Mr. Justice FARWELL: Let him answer, Mr. Upjohn, he may have some explanation. Go on, Dr. Hope?—What I wanted to say was this. That when the small-pox was spreading towards the south end of the town, cases had occurred in the streets or a street

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 Mr. E. W. Hope. quite close to the hospital. This was before the Park Hill Hospital was opened, and the fact of the opening of the small-pox hospital at Park Hill was coincident with the spreading from this place, which was traced to general infection, in the great majority of cases in the same way, and I have a great number of diagrams here. A

2459. Mr. UPJOHN : No, I want to keep to this for a moment. Of course there is always a margin that cannot be traced?—Yes.

2460. It is unfortunate you cannot give me the figures of the attack rate, because they enable one to draw some inference. What is the area of the Park Hill ground?—Something under ten acres. B

2461. Mr. Justice FARWELL : In the first 40-mile centre there seem to be very few houses?—There are not a great many, my Lord.

2462. There are some houses on the upper part?—Yes.

2463. Do you know the population there?—No, I cannot remember exactly, but all these houses are tenanted. C

2464. Are there people working in the docks, I see there is a graving dock there?—Yes, they pass by the site of the hospital down the steps there constantly.

2465. Mr. UPJOHN : Where do they come from?—From the streets of the neighbourhood, Mill Street, Coburn Street and others which you will see. D

2466. These are the streets where the infection has happened?—Yes, and these are the streets in which the infection has happened before the hospital was opened. E

2467. You have said that. What sort of condition is the vaccination in Liverpool?—On the whole I should think it was a well-vaccinated community.

2468. I am told you stand very high?—Yes, we reckon that about 5 per cent. escape vaccination but in so large a city that means a very big aggregate. F

2469. Still you stand on the highest basis in the community or perhaps the highest?—The population of Liverpool is, I believe, one of the best communities in the kingdom, but this Toxteth is not so well vaccinated, the district where Park Hospital is has a less vaccinated community than the other parts. G

2470. Take the Priory Road Hospital?—There also if you take the quarter-mile centre, except on one side there does not seem to be any population.

2471. Is that so?—There is a sparse population on the other side, H labourers, and some farm buildings and so on.

2472. I do not even see this. You are not able to say what the population is within the quarter of a mile centre?—About 200.

2473. How do you get at that, by a census?—It was taken some time ago. February 13, 1904

A 2474. There is a good deal of open ground round there and there have been some cases in the neighbourhood?—There have been. Mr. E. W. Hope.

2475. These you have located as best you can?—Yes.

B 2476. Then, Fazakerley; there must be a good deal of open ground round it?—Yes, the corporation bought a large area there for the purpose not only of a small-pox hospital, but a general fever hospital. We put them on the same ground. We have 138 cases there.

2477. Within the quarter of a mile zone, are there any inhabitants at all?—Yes.

C 2478. But there are not more than two or three buildings shown, are there?—No; there are some new streets also growing up in that neighbourhood.

2479. Growing up, but are they inhabited yet?—Yes.

2480. Within the quarter of a mile?—No, I should think not.

2481. I am only asking about the quarter of a mile?—No.

D 2482. Then, perhaps, there is no one within a quarter of a mile?—Yes, there is a population of something under 200 people.

E 2483. That does not tell me much, so far as that matter goes. I only see one set of buildings. It looks like a farm and two small buildings within the quarter-mile zone?—There are some cottages there, but not very many.

2484. I put it to you that the inhabitants there are far below the 200?—I do not think they are very much below the 200.

F 2485. How long has that Fazakerley Hospital been open?—About two years. The new hospital is not finished, but there is an hospital for small-pox with 180 beds.

2486. The other one has been going on about two years?—Yes.

2487. The Priory Road Hospital—how long have you had small-pox patients there?—About a couple of years.

G 2488. You do not send many?—It is a small place. We have sent as many as it will hold.

2489. How many is that?—Forty-three.

2490. In considering the value of negative evidence there are a great many things which have to be taken into consideration are not there?—There are.

H 2491. You want to know with regard to the state of vaccination the state with regard to previous attacks, and the age of the people. I daresay you agree with me that after 35 or 40 the susceptibility rapidly diminishes?—The susceptibility to what?

2492. To an attack of small-pox?—No, I do not.

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2493. You do not?—No, it depends on vaccination, or if the person is re-vaccinated.

2494. I put it to you, apart from vaccination, that old people are not so susceptible to small-pox as people in the prime of life?—No, I do not agree with that. A

2495. You have not noticed that?—No, that entirely depends on vaccination.

2496. If there is vaccination, I agree that is a distinct thing; I am putting to you the age as something apart from vaccination—a collateral matter?—Then I should think it has little if any bearing on the question. B

Mr. UPJOHN : Then we have heard the contrary of that.

Re-examined by Mr. MACMORRAN.

2497. You have put in a diagram of cases that arose in the Lansdowne Street case—that is, in the neighbourhood of Park Hill Hospital?—Yes, in the same ward district—in the south end of the town—not far from the Park Hill Hospital. C

2498. I wanted to know if it is within the half-mile radius?—I really could not say without looking at the map if it is within that vicinity—no, it is beyond. D

2499. Are some of the cases you show upon that diagram as proceeding from the Lansdowne Street case at places within the radius; I see Mill Street, Brook Street, Fletcher Street, Dexter Street, and so on.

Mr. UPJOHN : Which hospital are you referring to now? E

Mr. MACMORRAN : Park Hill.

The WITNESS : No, that is beyond the half-mile radius.

2500. Now with regard to the Fulham case which was put to you, are there circumstances in connection with that showing other causes than the presence of hospitals?—So I understand. F

Mr. UPJOHN : Which report is this?

2501. Mr. MACMORRAN : The 10th annual report, page 326, he himself enumerates a list of 70 occasions, day by day, of communication between the hospital and the district around it, as suggesting opportunities for the spread of infection. He goes into G

that, and draws one conclusion. Do you draw the same one?—I February 13, 1904
 draw the conclusion that communications with the hospital is a
 means of spreading disease—that has been our experience. Mr. E. W. Hope

2502. Mr. MACMORRAN : Your Lordship sees at the top of
 A the page the number of persons communicating with the hospital for
 six days are given as a total of 439. He says : “ Indeed so frequent
 in the particular period had been the communications, and so
 numerous the agents thereof, that if the agents or many of them
 could have been capable at that time of acting as carriers of infection,
 B the explanation of some subsequent outbreaks of small-pox might
 not have been far to seek.” Then he gives an example, and he comes
 to the conclusion that they were not the cause of it. Everything
 depends on the correctness of that inference, does not it?—Yes.

2503. And with regard to Dr. Power's report, have you seen
 C the examination of that report by Dr. Bridges in the Local Govern-
 ment Board's annual report for the years 1885 and 1886?—Yes, I
 have seen that.

2504. And he draws the conclusion?—I know he does.

2505. Or at least he indicates a possibility of different causes
 D than the presence of the hospital.

Mr. UPJOHN : That is not quite accurate.

Mr. MACMORRAN : Then I will read the passage.

Mr. UPJOHN : On page 217.

E Mr. MACMORRAN : Page 220 is the passage that I meant.

Mr. UPJOHN : That is only on the theory. What I have
 examined the doctor upon was the passage on page 217.

Mr. MACMORRAN : I know that ; but I am entitled surely to
 read it as a whole.

F Mr. Justice FARWELL : Certainly you are.

2507. Mr. MACMORRAN : Just one sentence ; “ A necessary
 condition for scientific proof of atmospheric contamination, and
 contagion would be the elimination of all means of ordinary com-

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munication in the intervening spaces." If you cannot absolutely eliminate that your inference is a very inexact one?—Precisely.

Mr. UPJOHN : Would your lordship mind asking—of course, this was not put to him—whether he agrees with the passage on 217. A

Mr. Justice FARWELL : I protest. I am not going to say whether persons have drawn correct deductions. I cannot do it. I am not going to examine into their reasons ; I treat them as experts and I give weight to their opinions as experts. By your cross-examination you can try to shake their expert knowledge. I will consider whether that has been done, but Dr. Hope is entitled to his opinion, and it seems to me to be a reasonable one. I am not going to say which is right and which is wrong, and it would be absurd for me to attempt to do so. B

2508. Mr. MACMORRAN : You have read the Sheffield case as you have told my learned friend?—Yes. C

2509. You know that in that very report that I read yesterday there were circumstances showing extraordinary means of actual and direct convection?—Certainly.

2510. People crowding round the ambulances and all sorts of things?—Yes, I remember it quite well. D

2511. That points also to the difficulty of drawing any conclusion as to infection coming from the hospital?—It points to the impossibility of drawing any sub-conclusion.

2512. With regard to the Glasgow case you were going to say something about that and my learned friend promised that you should do so but he did not give you the opportunity afterwards?—I was merely going to say this, that what has happened in Liverpool in all likelihood has also happened at Glasgow. That is that the seeds of the disease are sown round the hospital, and until this outbreak is absolutely stamped out as they say— absolutely done away with— and until they can start again from a new point and watch more closely what really is the centre of infection, I think there is nothing to be learnt from the Glasgow outbreak. It is one which I followed with the closest attention. Glasgow is the sister city to Liverpool and we are constantly in communication with each other. E
F
G

Mr. ASQUITH : With reference to a question to which my learned friend has directed some of his evidence as regards people driving up to this hospital I do not know whether we ought to trouble your Lordship in evidence as to that. H

Mr. Justice FARWELL : No, I don't think so. That would really be a case of negligence in the management. You are not going into anything so petty as that ; you are going on broad grounds.

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A Mr. UPJOHN : I thought that I accepted in terms what has been suggested with regard to that.

DR. ARTHUR NEWSHOLME, sworn.

Dr.
A. Newsholme.

Examined by Mr. PARKER.

B 2513. I think you are a Doctor of Medicine in the University of London?—Yes.

2514. And a Fellow of the Royal College of Physicians, London?—Yes.

2515. And you are Medical Officer of Health for Brighton?—Yes.

C 2516. How long have you been there?—About 16 years.

2517. You have been also Medical Officer of Health for Clapham?—That is so.

2518. When was that?—For the five years preceding the 16 years.

D 2519. I think you have also been Examiner in Public Health for the Universities of Oxford and London, and you are at the present time President of the Incorporated Society of Medical Officers of Health?—I was President two years ago.

2520. I think also you are a Member or Fellow of the Royal Statistical Society?—Yes.

E 2521. With regard to your personal experience I will take first of all your experience at Brighton, where you have been 15 years. Where are the Brighton small-pox cases isolated?—Until last year they were isolated on the same hospital site as other infectious diseases, and for a considerable part of that time such cases as occurred were treated in a large corrugated iron building—a temporary building divided into three compartments. In one compartment was small-pox ; the middle compartment was kept empty, and the third compartment had cases of scarlet fever in it.

F 2522. Was that the case during a good many years preceding last year?—That was so. We only had a small number of cases, but

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such cases as occurred had to be treated under those conditions, and were treated without the slightest cross infection occurring.

2523. When you say you only had a small number, what sort of average do you mean?—The largest number of patients we had at any one time was 10. Most of the time we had only one or two tramps and other persons of that class coming into Brighton with infection. A

2524. Brighton is fairly lucky in being immune from this disease?—Yes, we have always been successful in dealing with the early cases. We have had no difficulty in so administering the hospital as to prevent the spread of disease from one set of patients to another. B

2525. You have visited, have you not, the hospital in question in this action at Nottingham?—I have.

2526. You have considered its surroundings?—Yes. C

2527. Both in connection with the Local Government Board requirements and otherwise?—Yes; it meets the requirements of the Local Government Board memorandum.

2528. In your opinion, is there any practical danger in the hospital—assuming, of course, that it is well managed—say, for people passing along the road?—There is no danger, in my opinion, whatever from any crowd of people passing along the road. D

2529. Does that apply to the residents and to the workers in the neighbourhood, or within a quarter of a mile limit?—Undoubtedly. E

2530. Now, in your position as President of the Incorporated Society of Medical Officers of Health, you are brought into contact with your brother officers from all parts of the Kingdom, and you have an opportunity of knowing their opinions on this question?—That is so, and more particularly as editor of their official journal, called "Public Health," in connection with which I have received annual reports from nearly every district of the Kingdom. It was part of my duty to extract from them matters with regard to public health, and especially bearing on small-pox and like diseases. F

2531. I think you are the author of a book on "Vital Statistics," which is a text book?—That is so. G

2532. But you have not, unfortunately, incorporated into it such data as you have on small-pox in that book?—Not on the question of aerial dissemination.

2533. Have you studied this question of small-pox and made enquiries from the medical officers of health whom you have met in connection with your society?—That is so. H

2534. And may I say that you have read the literature in this case?—Yes, I have.

2535. And especially Dr. Thresh's report?—Yes, I heard his paper given and I read it, subsequently. I

2536. And also Dr. Power's report?—Yes, most carefully.

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2537. First of all with regard to the information you have obtained from enquiries amongst medical officers of health, do you find that it is the general opinion of medical officers of health that small-pox hospitals are a danger to the neighbourhood.

Mr. UPJOHN: One moment, my Lord, My friend is asking about the opinions of others,

Mr. Justice FARWELL: This is a way of shortening the case. I cannot have all the medical officers in the Kingdom called, and this gentleman is in an official position and it is his duty to take these proceedings.

The WITNESS: I found that the preponderating opinion amongst the majority of the medical officers of health to be that the danger from a small-pox hospital properly administered is practically nil, and I find from my investigations by means of these various reports, that in nearly every instance there has been no evidence of such spread, the cases in which such spread has been alleged to have occurred being capable of being counted on one hand.

2538. Now then I want to know, referring especially to Dr. Thresh and Dr. Power, and looking at it for the moment from the statistical standpoint, have you any criticism to make upon the method by which they have arrived at those results?—I think that Dr. Thresh's report is radically unsound as a statistical study of the particular epidemic which he refers to.

2539. Will you explain to his Lordship why you think that is so, as shortly as you can?—In the first place he has not differentiated between the primary cases in each household and the secondary cases which absolutely vitiates the percentages which he formed.

2540. Just explain what is the importance of that differentiation between the primary and the secondary cases?—The reason of that is, my Lord, that given a case of small-pox in the house itself, and a case two and a-half miles away in a ship as a possible source of infection, one is bound as a matter of common sense to assume that the first case in the house is the cause of the second in that particular house, and that differentiation has not been made in Dr. Thresh's report. It is a mere matter of common sense to assume that.

2541. That is one point—is there anything else you have to remark on the statistical point of view?—In some of the villages or hamlets, the paucity of *data* was extreme. To make any satisfactory deduction from them would be absolutely absurd.

2542. I think in one of those books you have before you you can give an instance of the paucity of *data*?—In one hamlet two cases

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are made the basis on which the case rate per 1,000 of population is based; and a mere matter of an accidental case would upset the whole of the percentage.

2543. Supposing that there was one undiscovered case, and the percentage would then be?—Almost reversed. A

2544. Have you any other criticism to make, especially with regard to the data—I will not say the numbers of each case, but the number of cases which Dr. Power and Dr. Thresh have taken on which to base their generalisation?—I think that in each instance they have not generalised, but have argued from a special instance, and that it was their duty to go on and to observe other instances—whether they were confirmatory or non-confirmatory of the main conclusion. I may illustrate it in this way. Supposing there is the experience of 100 hospitals, in one of which dissemination whether by aerial or by mal-administration has occurred from the hospital, but in the other 99 there is absolutely no evidence of such occurrence, then it is reasonable to suppose that the factor which caused the spread in the one instance is a factor which did not exist in the other 99. B C

2545. Let me see if I understand you. Do you mean this, that supposing instead of taking three hospitals or four—Fulham, Bradford, Sheffield and the Orsett case, you had gone on and taken all the hospitals in the Kingdom, say with over 100 beds?—Yes, you would then have had two or three instances of apparent dissemination from the hospital, and an immensely preponderating number in which no such dissemination could be proved, and in which it had not occurred. D E

2546. And you would say that was a factor which was peculiar to a particular place?—You are bound by all the rules of logic and common sense to assume that there would be a special factor existing in the exceptional instance which was the cause of the exceptional experience. F

Mr. Justice FARWELL: That reminds me of a chapter in Mill.

2547. Mr. PARKER: Have you any other criticism to make upon that?—Those are the main leading principles. G

2548. Tell me with regard to Clapham. When you were medical officer of health there did you have a general practice in the neighbourhood of the hospital?—Yes, at that time the Stockwell Hospital was used for small-pox patients, the largest number present at any one time being, I believe, 53, and therefore the experience there is very analogous, with one important exception, to that of the Nottingham Hospital. H

2549. Did you make it your business to inquire when cases occurred in the neighbourhood of the hospital how they contracted the contagion?—Yes.

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A 2550. In the majority of cases did you come to any definite conclusion as to the mode in which contagion had been contracted?—Yes, in several instances it was traced entirely to cases which had been overlooked. In some other instances there had been undoubted maladministration of the hospital causing cases in the neighbouring streets. I myself saw, for instance, the driver of an ambulance on his way to the hospital with patients, going out to a public house.

B 2551. Now with the exception of those which you traced to things like maladministration and communication in your experience at Clapham did you find that the hospital was a centre for the dissemination of the disease as it has been put?—No; on the side of the hospital which had no such contact there were practically no cases, or a very small number indeed.

C 2552. I think on the one side of the Clapham Hospital at that time there was a deep railway cutting and no bridge across it?—Yes, and on the side away from the hospital, within the quarter of a mile radius, only one case occurred as compared with 47 on the same side as the hospital, although the social circumstances and the other conditions of the population were, so far as one could judge, identical.

Cross-examined by MR. UPJOHN.

E 2553. With regard to this last point, it is a fact that the statistics of all the five Metropolitan Asylums hospitals in London were collected?—That is so, I believe.

2554. There were five and no more?—Yes.

2555. And the statistics in respect of the five were collected?—Yes, I believe so.

F 2556. And after Dr. Power's report, which we know was limited to the one—to the Fulham Hospital, the whole matter was investigated by the Royal Commission?—That is so.

G 2557. And the Royal Commission found that in each case the hospital operated in the area round it, did not it?—That is the conclusion they came to, I believe.

2558. They examined the most able persons of the day, did not they?—They examined Dr. Power, and Dr. Power's overwhelming influence determined the result.

H 2559. But Dr. Power at that time was a young man?—He was a man whom we all highly respected.

2560. You do not suggest that there was no other person of

February 13, 1904 eminence examined?—I said that the case was settled and decided on Dr. Power's investigation.

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Dr.
A. Newsholme.

2561. Do you remember who were the commissioners?—I remember some of them.

2562. Sir James Paget, Sir James Burton Sanderson, Dr. Alfred A Carpenter?—Gordon.

2563. Sir William Henry Broadbent, Sir Jonathan Hutchinson? —Yes, all distinguished men, but not distinctive in preventive medicine.

2546. All distinguished in reasoning upon the subject. I am B going to put to you a number of gentlemen they examined. I see they examined Dr. Bridges, for instance, who entertains the opposite view. They examined Dr. Bridges, who was also an officer of the Local Government Board. That is so, is not it?—That is so.

2565. Excluding the appendices I have got over 300 closely C printed pages of evidence?—Quite so.

2566. Including Sir William Jebb and Sir John Simon.

Mr. Justice FARWELL: At the outside it is the finding of another court on a question of fact. Surely he is not going to be cross-examined whether the witnesses were trustworthy or not. D

Mr. UPJOHN: Certainly not, my Lord, but it was rather put upon me by Dr. Newsholme that the Commission reported on the strength of Dr. Power and nobody else.

Mr. Justice FARWELL: You began by asking him whether he did not agree with the result, and it was quite within your right to E say that they were very eminent people.

1567. Mr. UPJOHN: I am obliged to your Lordship for the suggestion. As a matter of fact, the whole investigation into the operation of the small-pox hospitals in London arose from the reports of the medical officers in the districts in which they were situated, F did it not?—That I cannot say.

2568. The last witness knew it?—As a matter of fact, I know that Dr. Dudfield, of Kensington, who had part of the Fulham district in his jurisdiction, was strongly adverse to the idea that there had been any aerial dissemination of infection from the hospital. G

2569. Do not run away with the idea that I am trying to put upon you the theory of aerial convection. What I am trying to get from you is what knowledge of these cases it was shown that the hospital did act as a source of danger to the population round it?—That was a finding of the Royal Commission. H

2570. Do you doubt that?—I doubt the results of the investiga-

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tion. At that time there was no notification of infectious diseases. A large number of cases were recognised as disseminating the disease unknown to the authorities. That introduced an immense fallacy into any conclusion based on the then statistics.

A 2571. Let us see if that is so. That cause that you have mentioned would be just as operative beyond the quarter-mile zone as within the quarter-mile zone?—Yes.

B 2572. Therefore that is not a cause which counts for the enormous difference between the proportion of cases within the first zone and the proportion of cases beyond it. It is common to both?—On that point I say this. In one of Dr. Power's reports the quarter-mile percentage was based on two cases.

2573. Just give me the reference to that, will you?—It is on the table.

C 2574. Mr. Justice FARWELL: Yes, it was so. I noticed it at the time. And there were more in the half-mile circle than in the mile.

2575. Mr. UPJOHN: Is that the 10th Annual Report?—For the year 1884, 14th Annual Report.

D 2576. That is one I have got. Just take this 10th Annual Report. There is no objection of that sort made to his reasoning. Just look at page 321—that is the chief one, the one that led to the appointment of the commission (Report handed). Of course, all the details for that you find in the tables and pages before. I was rather surprised when I heard you tell my friend that because I had not come across the passage?—In that investigation within the quarter-mile circle there were 13 cases; the table is at the foot of page 315.

E 2577. Do you object to a deduction from that?—I do not object to a deduction from that, but the element of chance comes in very heavily indeed. A single case missed will count all the more the fewer the cases.

F 2578. The smaller the zone the greater, no doubt, is the part which the element of chance may play. So far we are agreed?
G —Yes.

2579. But that, I think, is the only case in which you find so small a number?—That is the nearest zone.

H 2580. After all within a quarter-mile radius you would not expect to find a very large number?—If there were dissemination from the hospital I should.

2581. But this was a very populous place. You must remember Dr. Power had pointed out that there was a very small population

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within the quarter-mile. There were two running grounds, I think, at Lillie Bridge—a small running ground on two sides of it?—Yes.

2582. But just look at the difference. If you take the table on page 321 on the quarter-mile circle, taking together all the five periods was to get as good an average as you can, and eliminating chance as much as you can, the incidence on every 100 houses is over 17, whereas on the three-quarters to a mile, it is $2\frac{1}{2}$ —2.5. That leaves an enormous margin for any case that has crept in by chance. At all events, I think, you will agree with this, that the result of Dr. Power's investigations in this volume, the 1880—81 volume, led to the appointment of the Royal Commission, and the report of the Royal Commission ultimately led to these hospitals being swept out of London?—I think there is no doubt of it. A

2583. And is it not also the fact that since the hospitals had been swept out of London, this special rate in the particular districts has disappeared?—That is an excellent instance of a logical fallacy. It has also disappeared in other parts of England in which there has been no removal of a hospital, and where there has been no small-pox in the intervening years. It is an excellent example of reasoning for limited data. B

2584. It is reasoning from all the data you have in London?—I decline to reason from only the in data London. I say, in other large towns where there has been no removal of small-pox hospitals, there has been the same long interval of relative absence of small-pox. C

2585. Is it not the fact that since the removal of the small-pox hospitals from London, London has recovered the position that it had with regard to the provinces. I am glad you mentioned that point. Is it not a fact that before the small-pox hospitals were established in London, there was less small-pox in London than in the provinces? I do not remember it. It may be so and I accept it. D

2586. I will give you the reference to it, because I am speaking by the book. Is it not the fact that during the time of the existence of the small-pox hospitals in London that London was degraded in reference to the provinces and became a very much worse place in comparison to them?—That may be so. E

limit it to the provinces as a whole—you must take each big city on its own merits.

2587. But is it not also the fact that after the removal of the small-pox hospitals, London recovered its position and is now better than the provinces, taking the provinces as a whole?—You cannot F

2588. But just now you objected to taking London on its merits, and you said you must take the whole country?—No, I said you must compare London with other cities individually, and not collectively, and find out the points of difference. G

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I

2589. You do not compare London with Brighton?—If I did London would come out badly.

2590. I daresay it would ; although as a matter of fact is the rate of small-pox per 1,000 in London less than in Brighton?—I should say very much higher.

2591. Is it higher—just tell me?—Without having actually calculated the data, I should say, undoubtedly, very much higher.

2592. You cannot give me any figures to support that?—I can only give you the figures which I gave in chief, that the largest number of cases we have had in the last 15 years in any year in our hospital has been 10, and that is a ridiculous number with regard to the ratio in London.

2593. You have not quite so large a population yet in Brighton as in London?—We have a population of over 120,000.

2594. I am speaking with reference to the attack rate?—Yes, per 1,000 of the population. We have all the possibilities of importation, but we keep it under by good administration.

2595. We will not discuss Brighton. I have not the slightest wish to say anything against your administration there, which I have no doubt is admirable ; but is it not a fact that, comparing London with the provinces, London was degraded whilst the hospitals were there, but has now got into a better position?—That may be so or not but it is necessary to say this, that Brighton is a good example to compare with London as a single provincial town, for this reason, that, although we have been treating small-pox—what small-pox we had—in contiguity with our fever patients for these years, we have had less cases than London, which has moved its cases outside its boundary.

2596. Before I leave the question of London, I want to know what you did with regard to the Stockwell Hospital, because we know from statistics that, whilst the Stockwell Hospital was in Clapham or rather in Lambeth—Lambeth lost its position with regard to other parts of London?—Yes.

2597. It became degraded from a good position to a worse one?—Yes.

2598. What was it you did for the purpose of tracing the cases. I want to know to what extent you did it. On what scale did you work?—I was in practice and I was also medical officer of health, and I saw a number of cases personally, and as medical officer of health these cases occurring in my district had to be investigated individually and personally by me.

2599. Did you make investigations for the purpose of ascertaining whether there was an excess of instances within the area of the hospital?—No, that was made by the medical officer of health for

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Lambeth, Dr. Vernon, who was my neighbouring colleague, and his results are given in a report by him.

2600. Was it a report to the Local Government Board?—No, it is a report which he gave to the Society of Medical Officers of Health. A

2601. But that is not what you spoke about. You said that you had traced the cases, and traced them to maladministration?—I said that I had traced individual instances to maladministration, and in some other instances I detected contact at a later period with what is most serious in small-pox outbreak, namely, missed cases. B

2602. You were a busy practitioner, no doubt, and your tracing of cases did not extend to anything like the whole of the cases?—Oh, no, because some of them were in Lambeth as well; we were two contiguous districts.

2603. You did not trace the whole of the cases in your district, did you?—Certainly I did. C

2604. As a matter of fact, however well a hospital is conducted, it is impossible, is it not, to prevent some communication between the outside and the inside?—It is impossible to prevent communication, but it is perfectly possible and practical, and is usually done, to prevent the communication disseminating disease. D

2605. But I mean to prevent a communication which it is not intended to take place. Of course, there is some necessary communication which takes place under safeguards. You cannot always ensure that those safeguards will be carried out, can you?—We do ensure it in the vast majority of hospitals. It is only when there is careless administration that the mistakes happen. E

2606. What I am pointing out is that it is impossible to ensure that every member of your staff will be careful, I mean they are fallible?—In the vast majority of instances it is actually done. It is a difficult and onerous task. F

2607. Do you mean that every time a nurse goes out she changes her clothes, has her bath with the proper disinfectant and takes disinfectant clothes with her. You can say you believe that it is done. What I am putting to you is that it is quite impossible to secure observation of your rules in every case?—Our experience shows that it is done and that the cases in which mistakes occur are very exceptional indeed. G

2608. Then you differ from Dr. Savill and numerous other writers all of whom have said that it is a matter of practical impossibility?—I am quite certain they are wrong and one has the experience of the vast majority on the other side.

2609. Let me put this to you. When you have got a long frontage along the high road, a big frontage to a footpath, it is practically impossible, is not it, to prevent illicit communication?—I I

agree with what Dr. Boobyer said in his evidence that with a frontage to the main road it is not so dangerous because it enables more complete supervision to be made.

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2610. By whom?—By the staff, and if necessary, by policemen.

2611. Are the staff to be out in the road supervising?—There are always men, members of the staff whose special business it is to see that isolation is properly kept up, and that the men who are convalescent do not stray.

2612. You think there ought to be male members of the staff detailed for the purpose?—In every hospital there is a man whose special duty it is to do that. The outside porter he is called. I do not mean to say that he does that, and nothing else.

2613. Now, I want to ask you one or two other questions about this particular hospital. You say there is no danger whatever to anyone in the road, or to anyone within the quarter-mile limit?—That is my opinion.

2614. You know the facts as to the residents within the quarter-mile?—Yes.

2615. And as to the workers within the quarter of a mile?—I do.

2616. And your opinion is that there is no danger whatever?—There is no danger whatever.

2617. Do you think the requirements of the Local Government Board to be necessary or not?—I think they are the natural result of their views on aerial convection, and I think that it is also desirable that those conditions should be fulfilled, because if you have a sparse population around a hospital, it minimises the difficulties of administration. I think that is the main reason why I should be inclined to agree with it.

2618. That is what I have already put to one gentleman who has been in the box. In selecting a site ought not the authority with a view to the security of persons in the neighbourhood to regard the minimising of communication between those within and those without?—The best site is that in which the chance of carelessness is minimised.

2619. The Local Government Board objected to this site on the ground, amongst others, that many of the working population would, in going to and from their work, have to traverse the road adjoining the site, and they thought that the hospital was a danger to the road?—That is not an objection of the Medical Department of the Local Government Board; it is an objection of the administrative department.

2620. In what department do you rank Dr. Fletcher?—In the medical department.

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2621. Inasmuch as this is based on Dr. Fletcher's report——?—
We do not know that.

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Dr.

A. Newsholme.

Mr. Justice FARWELL : I do not know that.

Mr. UPJOHN : It says so.

Mr. Justice FARWELL : I do not know it. That is not the A
proper evidence of it. The proper evidence is to see the report, but
the Local Government Board say that it is not in the public interest
that I should see it. I cannot take secondary evidence of a report
that ought to be produced, and is not produced because the Local B
Government Board will not allow it. I think it is very hard on the
Court in an action by the Attorney-General at the relation of other
parties. I observed that an answer has been given to a question put
in the House, but it is not for me to overrule it, and I must
submit.

2622. Mr. UPJOHN : You say that the preponderating opinion C
amongst practitioners is that there is absolutely no danger?
That is so.

2623. As a matter of fact I think that in every case that has
been investigated—I will take it in the last 20 years—I think I D
might say 30 years, with perhaps two exceptions, when the subject
did not seem to have cropped up, it has been reported by the
inspector who was sent to make the investigation, that inspection
did not occur to a much greater extent within the area round the
hospital than within the zone beyond that area?—But my complaint
is—— E

2624. Just one moment. There is a remarkable series of cases
to that effect is not there?—The cases which have been investigated
were cases in which there was reason to expect that that result
would be obtained. My complaint is, that all the hospitals have not
been investigated, and that due weight has therefore not been given F
to the vast preponderance of hospitals in which nothing of the sort
has occurred.

2625. I suppose those were cases in which there was no out-
break at all?—No, there were outbreaks, but without spreading
around the hospital of which we have a tittle of evidence—we have G
no tittle of evidence of spreading around the hospital.

2626. Are you speaking of any case within your knowledge?—I
am speaking of the evidence which I have collected year by year
from annual reports by medical officers of health who have had to
treat small-pox and of the complete absence of any information with H
regard to the spreading around those hospitals.

2627. They have reported, not to you in an official capacity, but in connection with some society?—That is so. February 13, 1904

2628. That is a voluntary society?—Yes.

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Dr.

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A 2629. Is it that they have reported that there was no special instance or that they have not reported one way or another?—They have not reported one way or another in the majority of those cases.

2630. But whenever they have made any report on the subject, the report always has been that there was a special excess rate?—That has happened in four or five instances.

B 2631. Only in four or five?—I do not remember any more—there was Sheffield and Bradford.

2632. And Leicester?—And Leicester.

2633. And Gloucester?—Gloucester was so mixed up with the immense general epidemic that I think the evidence is valueless.

C 2634. Do you dispute that it was observed at Glasgow?—I do not agree with the inference drawn from the facts observed at Glasgow.

D 2635. Do you dispute that in the thousand feet zone in the 1900 to 1902 outbreak at Glasgow the rate was 9·97, or call it 10 for a round figure; whereas the average for the whole was 2·3; or call it 2½ per thousand?—No, I do not dispute that of course.

2636. Then in that case the attack rate in the first zone round the hospital was four times the average for the whole city?—It was according to those figures.

E 2637. That was reported to you, was it?—Yes, I had a copy of it.

2638. Now, then at Hastings it was the same thing. Did you see Mr. Bruce Lowes' report?—Yes.

2639. That is 1893-94?—Yes.

F 2640. There the percentage was very much higher within the first 100 yards than in a distance of from 400 to 500 yards?—Yes.

2641. Enormously?—Yes.

2642. Then the same thing at Halifax; that is right?—I do not remember the Halifax instance, but I accept it.

G 2643. It is in Appendix 8 to the Report of the Royal Commissioners?—Yes.

2644. And Manchester is right?—Yes.

H 2645. Bradford we had evidence about. How do you explain what happened at Bradford, that when the old hospital—I will call it the old hospital because there was a new one—had got into work, there was an extraordinary excess of the attack rate. For instance, taking it all through—I do not want to be open to any logical objection—the attack rate in the one-mile radius was 3·6, whereas in the rest of the district it was 0·6—that is to say, it was as 6 to 1. In that parti-

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cular month, I think it was, the attack rate in the inner zone—the quarter-mile—was 10·4, and in the city, outside the one-mile zone, it was 0·6; that is to say, 20 times as much?—I explain those facts simply on the ground that small-pox must begin somewhere. If you took your circles round a railway station you would probably find an increased incidence. A

2646. But unfortunately it did not begin there; it began in another part of the town, and it manifested itself in the zone round the hospital in about a month after they began to receive the cases from other parts of the town or city—can you explain that?—I explain it as owing to what would be called a normal spread of small-pox. It spreads from one part to another. Sometimes you cannot trace it. B

2647. Is that an answer to the question. In the whole of the city outside the mile zone it was '6 per 1,000, whereas in the town it was 3·6 per 1,000, and in the inner quarter mile at one time it was 10½ per 1,000. That is not a case of spreading from one place to another, it is a case of finding that all this began in a different part, and the result of the whole epidemic was that you found that attack rate concentrated in that particular part?—I do not agree with that statement of the case at all, and I should want to know the course of each particular case and trace it from case to case, dot by dot. C D

2648. But that does not affect the question that there was this excess attack rate whatever may be the cause?—Undoubtedly, I assume that. E

2649. When the old hospital ceased to be used it fell off round there and an increase was observed round the new hospital?—It was bound to fall off after having exhausted itself in a particular place and was bound to go elsewhere. F

2650. That is your explanation. Now you are not aware of the fact that the epidemic had not fallen off because when cases were taken to the new hospital it was at once observed that there was an excess attack rate round the new hospital, and it fell off round the old until the new hospital was burnt down and the old hospital used again, and then the increase again was noticeable round the old?—That is in accordance with what one knows of the increase of small-pox in any city where it is not absolutely controlled. It increases in one place and then dies down and passes on like a wave to another part. G H

2651. Do you say that that is the real explanation?—I do.

2652. I put it to you, that you always find more where you have a hospital?—I answer that you do not find more except in these extremely exceptional instances.

2653. You may call them exceptional. Sheffield is another case, and Leicester is another?—Sheffield, in my opinion, is out of court, because I believe there was no notification of small-pox at that time. February 13 1904

A 2654. Sheffield was specially investigated when the hospital was moved. During the currency of the epidemic the attack rate fell off by 90 per cent. Can you explain that?—I think it is highly probable that there was maladministration in the stress of the epidemic.

B 2655. I want the best case within your knowledge of an outbreak, where the attack rate in the immediate neighbourhood of the hospital—we will take the quarter-mile zone, 1,000 feet if you like—where there was an excess attack rate within the zone. Give me the best case you can?—I am not aware of any case which has been worked out in that particular way. Persons do not usually—medical officers of health do not usually—publish their negative results.

C 2656. You are not aware of any case?—I am simply aware of the fact that, in the vast majority of hospitals, no such special instance round hospitals have been found, as indicated in their official reports, in which they are bound to put the conditions under which the epidemic spread, and in which they would have been bound to put these points.

D 2657. That is all you know on the subject—it is negative?—It is very important evidence as showing the preponderance of instances in which no such question has occurred.

E 2658. Just tell me one big outbreak in which there has been no such report as you have mentioned within the last 10 years—there have been plenty since 1892—a big case, so that one can test it, in which there was not such a report?—I am not prepared on the spur of the moment to give instances of the outbreaks of small-pox throughout the country. I can speak chiefly from my own experience.

F 2659. You come as any expert to support a particular theory, and I ask you to give an instance of your theory?—I support no theory, I said what is the experience, and what seems to me to be the reasonable view of the evidence.

G 2660. They are proposing to establish a small-pox hospital at Hove, are they not?—Yes.

2661. What line is Brighton taking with regard to that?—No line.

H 2662. Is not Brighton objecting?—No.

2663. Have not you reported to your corporation against it?—No.

2664. Have you made a report upon it?—I made a report with respect to the site which was close to our water-works. That was a confidential report, and I did not think it was advisable to have it so near to our water-works.

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2665. Why was that?—I made no public report.

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2666. If this highway is so safe at a distance of 50 feet, how far was this site from your water-works?—I reported in that confidential report—

2667. Please answer the question?—I will do so; but I will answer it in my own way. **A**

Mr. Justice FARWELL: You brought it on yourself, Mr. Upjohn; the gentleman is giving his evidence in a proper way.

2668. Mr. UPJOHN: I am sorry if I did so. How far is the proposed site from your waterworks?—Speaking from memory it is within the quarter-mile; I reported confidentially, and that is why I object strongly to this being brought in here, that there was no objection so far as the spread of infection was concerned; but that it might do Brighton a great deal of harm from the sentimental point of view. **B**

2669. It had nothing to do with the water-works?—No—sentimentally, it might do us harm, and that is a very serious matter in a town like Brighton. **C**

2670. The cases you had at Brighton were not very acute cases?—They are like other cases of small-pox, some more acute than others. **D**

Mr. UPJOHN: Need I travel through all these criticisms of our reasoning?

Mr. Justice FARWELL: No, certainly not. I am only taking this for the benefit of your people, but really it is not a part of my business to examine the arguments of the experts, and I am not going to do it. **E**

2671. Mr. UPJOHN: I am bound to ask one question to show that I did at any rate notice your criticism, viz., that in Dr. Thresh's reasoning he has not differentiated upon the primary and secondary cases in the houses. If he has treated the county and every district in it on the same footing, is there any validity in the criticism?—Absolutely so; he ought to have treated the whole county in a logical and fair way. **F**

2672. If Dr. Thresh has ascertained the number of cases in each district of the county, what does it matter whether they are primary or secondary?—It matters entirely and absolutely from the point of view of the theories that Dr. Thresh was attempting to establish. **G**

Mr. UPJOHN : I think I have cross-examined enough as to that—it is only argument. February 13, 1900

Mr. Justice FARWELL ; Yes, the most of it is only argument. Dr.
A. Newsholme.

Mr. UPJOHN : Yes, but one has to do it, my Lord.

A Mr. Justice FARWELL : I have borne it as well as I can.

Mr. UPJOHN : I agree that your Lordship has been very patient.

Mr. MACMORRAN : I do not propose to re-examine.

(Adjourned till Monday morning at 10.30.)

In the High Court of Justice.
CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,
Saturday, February 13th, 1904

BEFORE
MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

V.

THE MAYOR, ALDERMEN AND
CITIZENS OF THE CITY OF
NOTTINGHAM.

MINUTES OF EVIDENCE.

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Town Clerk,
Nottingham.

In the High Court of Justice.

CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,

Monday, 15th February, 1904.

BEFORE

MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

v.

THE MAYOR, ALDERMEN & CITIZENS
OF THE CITY OF NOTTINGHAM.

[*Transcript from the Shorthand Notes of BARNETT & BARRETT, 40, Chancery Lane, W.C., and H. H. TOLCHER & Co., 93 and 94, Chancery Lane, W.C.*]

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EVIDENCE—Fifth Day.

Dr. G. Reid.

Dr. GEORGE REID, sworn.

Examined by Mr. R. J. PARKER.

2673. I think you are a Doctor of Medicine of Aberdeen University, a Fellow and Member of the Council, and an Examiner of the Sanitary Institute?—Yes. A

2674. And recently you were an Examiner in Public Health at the University of Birmingham?—Yes.

2675. And I think you have written a text book on practical sanitation?—I have. B

2976. How many years' experience have you had in public health work?—Altogether 25.

2677. At present you are the Medical Officer of Health of the Staffordshire County Council?—I am and have been for 13 years.

2678. During the time that you have been Medical Officer of Health for the Staffordshire County Council have you had experience of outbreaks of small-pox?—I have. C

2679. And how many outbreaks does your experience extend to about?—Fifty-seven.

2680. In various parts of the county?—In various parts of the county. D

2681. Are you familiar with the methods that during the last 13 years have been taken for the isolation of small-pox patients?—I am. I have had to advise the district councils with reference to those measures, and also my own council as to the action which they should take. E

2682. During those 13 years what approximately is the number of small-pox hospitals you have had in the county?—17.

2683. What population about would the 17 hospitals serve?—About 1,000,000. F

2684. Can you give me the total number of beds which those hospitals provide?—309.

2685. During your experience can you give me approximately the number of cases which have been treated in this hospital?—1,057. G

2686. Mr. UPJOHN : Is that in the 13 years ?—Yes, during the 13 years. I have particulars of further cases, but that would be previous to my time.

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2687. Mr. PARKER : With regard to these 17 hospitals can you tell me—do they comply with the requirements of the Local Government Board of course you are familiar with those requirements ?—Yes. In no instance do they comply except in one. With one exception, none of them comply.

2688. In what respects do they not comply with the requirements of the Local Government Board ?—With regard to proximity to the roads and with regard to the population within the quarter and half-mile. I can give you the particulars shortly of that.

2689. You say with regard to population—now with regard to anything else ?—Shall I give you the particulars shortly ?

2690. If you will, please ?—In four cases the hospitals actually adjoin the scarlet fever hospitals. In two cases they are within 100 yards and 150 yards of workhouses, in eight cases they are within 100 to 300 yards of populous centres. When I talk of populous centres I mean thousands, not hundreds. In eight cases the hospitals may be said to be surrounded by groups of houses, so that well within the quarter of a mile the 200 is exceeded. In two cases public footpaths adjoin the fence of the hospital ; in one case the hospital stands in an angle formed by two much-frequented roads. In another case the hospital is itself a few feet from a main road in a populous centre. In another case the hospital actually adjoins the road on two sides.

2691. And in each instance you have given have you exhausted the whole of the 17, with the exception of the one you have mentioned ?—I have exhausted the whole of the 17, with the exception of the one that does comply.

2692. In the course of your duties do you come across the various district officers of health ?—Yes.

2693. How many have you in the county ?—57.

2694. Have you frequently conferred with them on the subject of small-pox ?—Constantly.

2695. And the arrangements of those hospitals ?—I have. I have made special inquiries also on my own account with the view of advising the Council as to the policy they should adopt with regard to the erection of new hospitals.

2696. From your own investigations and reports made to you, are you able to tell me whether in any of these 17 cases the hospital has proved a centre or nucleus of infection in the neighbourhood ?—Only in one instance.

2697. Will you tell me what that instance was ?—It so happens that

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it is the only instance in which the hospital complies with the Local Government Board requirements

2698. Tell me what happened on that occasion?—The hospital on that occasion had been rapidly erected—the temporary buildings had been rapidly erected and the enclosing fence was a very bad one. A Four cases resulted from that hospital, the first case being clearly traced to contact. It occurred with a road man, who was working for two or three weeks immediately outside this hospital, and on enquiring—an enquiry which I conducted myself—it was clearly proved that this man had been in communication with patients in the B hospital. And in that case, which arose from contact, three other cases arose in the quarter and half-a-mile radius, so that unless the subsequent cases had been traced first, there would have been an excellent example of an aerial convection from this hospital, because there were no other cases in that district in which the hospital is C situated.

2699. And the instance you have given—is that the only instance where any of those 17 hospitals proved to be a source of infection?—That is the only instance after a most careful enquiry.

2700. The hospital which you say did conform with the Local D Government Board requirements, where was that? Was that in North Staffordshire?—In north Staffordshire. It was provided by a joint authority which has recently been constituted. Subsequently to this outbreak the Local Government Board have approved of a loan E to cover the erection of permanent buildings upon the site, and within a distance of 45 feet from the public road the infected buildings are situated.

2701. May I take it that the first North Staffordshire Hospital was a temporary erection?—Yes, in the first instance.

2702. That was to meet some epidemic?—Yes, it was. F

2703. Since then the Local Government Board has sanctioned it as a permanent site?—That is so.

2704. Notwithstanding the road within the 45 feet?—Yes, in view of the cases which I gave, and which originated from the G hospital.

2705. Which were made known to the Local Government Board? —Which were made known to the Local Government Board at the enquiry. The loan was opposed by the parish council and by private individuals in the locality, and those cases were instanced as a reason for danger, and the Local Government Board had all the facts, and H on those facts they sanctioned the loan.

2706. Can you tell me how many cases were treated in the North Staffordshire Hospital—I mean is it a small or comparatively a large hospital?—I can give you the figures. In this particular I epidemic 260.

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A 2707. How many beds has it, or had it, when this particular epidemic occurred?—They were considerably overcrowded. They had to crowd the beds into existing or temporary buildings, but at one time and another the number of patients in the hospital were 41, 32, 18, and so on.

2708. What population is it estimated that that hospital would serve?—It does actually serve a population of a little over 300,000.

B 2709. I think that recently your county council have been reviewing the whole policy of small-pox hospitals, have they not?—Yes.

2710. And you have been advising them on the subject?—I have.

C 2711. What policy do they intend to pursue in the future with regard to these small-pox hospitals?—The policy is to unite the districts into large areas, providing a hospital to serve the whole area, and at the present moment a scheme is before the Local Government Board for that area in the south of the county to serve a population of upwards of 400,000. That is in addition, of course, to the area in D the north of 300,000.

2712. Is it intended gradually to do away with those 17 small-pox hospitals?—As soon as this building is erected the others will be done away with.

E 2713. How many beds will you have when this south hospital is complete in accordance with this new scheme?—We shall have 40 beds in the permanent hospital, and two areas—complete areas laid out for extension should occasion arise to the extent of 32 beds more, making 72 beds for a population of 400,000.

F 2714. That is to serve the southern part of the county?—Yes.

2715. And when your arrangements are complete in the northern part, how many beds will you have there?—It is not absolutely decided there, but we propose to have in the first instance 30, but it may be extended to 10 more.

G 2716. With regard to the site of the North Staffordshire Hospital—the one which has been sanctioned—notwithstanding the cases of infection from it, can you tell me about the population within the quarter or half-mile limits?—It is a small population within the quarter-mile, and the mass of the population is within the half-mile, but that does not equal the 600 of the Local Government Board standard, so that it is under the 600 considerably.

H 2717. As far as the population is concerned it is well within the requirements of the Local Government Board?—It is.

2718. Would the same apply to the other hospitals?—No, the

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other we should have great difficulty with as the plans are now presented to the Local Government Board. The area does comply but the measurements were taken from the centre of the hospital buildings, and not from the outside of the infected buildings. Taking another census from the outside of the infected buildings, 200 and 300 of a population are brought in. The result of that is that we shall have to alter the position of the buildings, which we shall have great difficulty in doing. We hope to be able to do so, but we must build there, and it will have to be, if necessary, provided out of the rates. A

2719. Speaking generally from your experience, and as the result of your studies on the subject, do you consider that a small-pox hospital, if properly managed, is a source of danger?—In my experience, certainly not. B

2720. Have you been yourself to this hospital in question—the Bulwell Hospital?—I have. C

2721. And made yourself familiar with its surroundings?—I have.

2722. And its administration—its internal administration?—Yes. D

2723. And what do you say of that hospital—do you think it is likely to prove a source of danger to anybody in the neighbourhood?—In my opinion, not the least likely.

2724. Whether to passers on the road or dwellers?—Whether to passers on the road or dwellers. E

2725. Or working people there?—Or working people there.

Cross-examined by MR. UPJOHN.

2726. I suppose you would have said the same thing, would not you, about the ships in the Thames?—I have not personally inquired into the circumstances with regard to the ships in the Thames. F

2727. What I am putting to you is this: Of course, you know about the cases?—Yes.

2728. You know the situation of the ships?—I do; I have been on the ships several times.

2729. Supposing there had been no information in the contrary you would have said about those ships that they were not the least likely to be a source of danger to the people on the other side of the river?—Yes, I should have said so from my own experience. G

2730. Of course it is largely a question of experience?—It is entirely a question of own experience. H

2731. Just let me then see if I can ascertain a little more closely your own personal experience. During the 13 years that you have

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been the medical officer for the county the method of isolation adopted has been by employing 17 hospitals scattered over the county?—That is so.

A 2732. When you speak of the methods of isolation for the past 13 years you speak of your own methods in that county?—I do.

2733. And I see for serving a million of the inhabitants you have 309 beds?—Yes.

B 2734. I suppose that is about a fair average proportion is it?—Having regard to the county it is a proportion which, at any rate, has answered the purpose. The population is not in one centre so that you do not have simultaneous outbreaks in the districts.

2735. If there were a larger centre of population you would want a larger proportion of beds?—We might possibly.

C 2736. There were 17 hospitals with 309 beds so that there would be under 18 beds on the average in each?—You cannot look at it in that way because these districts are all cut up—hospitals are not interchangeable. If the whole county could be looked at as one centre then it would be quite right to say that a certain number of beds would serve this county but in this case the county being cut up into various centres you have to have a larger proportion of beds than D would be otherwise necessary.

2737. In some of the districts?—In nearly every district because they are all comparatively small districts.

2738. I just pass that by for the moment. The 17 are still going on—you have not altered your scheme yet?—No, not yet.

E 2739. What is the largest number of beds in any one hospital?—There are two hospitals with 60 beds. Shall I give you the whole of them?

2740. What is the next number?—Below that?

2741. Yes?—22.

F 2742. How many are there at 22?—How many of the population?

2743. No, how many hospitals with 22 beds?—There is one hospital with 22 beds for one district.

2744. How many, I say?—There is only one.

G 2745. What is the next number?—The next is 20.

2746. And the next?—17.

2747. Then the rest, I suppose, would be quite small?—No, there are 16 and 18. There are two 16, one 18, 10, 13, 12, and so on.

2748. So that all the rest are below 12, are they?—Yes.

H 2749. Where are the two that have 60 beds?—One is at Willenhall, and the other is the North Staffordshire Hospital, to which I have referred.

2750. Has there been any outbreak in the Willenhall district in your time?—Certainly, a very serious outbreak.

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2751. When was that?—261 cases.

2752. How long ago was that?—That was in 1894 or 1895; I have not got the actual year.

2753. Just tell me about the district around Willenhall—what sort of a district is it?—Do you mean with regard to round the hospital? A

2754. Take the quarter of a mile zone?—Within 350 yards of the hospital there are groups of houses which bring the population considerably over the 200. Within 500 yards there is a very populous part of the Willenhall district. At the commencement of the populous part of the Willenhall district that would be reckoned in. B

2755. How long did that outbreak last?—It lasted—I must only speak approximately, because I have not the figures—for six or nine months.

2756. You cannot tell me more closely than that?—I could tell you if I had my material with me. C

2757. But you have not got it with you?—No, I have not; but you may take it that that is about right.

2758. How many cases were treated in the hospital during that six to nine months?—261. D

2759. At that time was there any inquiry made for the purpose of ascertaining where the cases came from?—Certainly.

2760. Did you take any part in the inquiry?—I did. It was very important that I should do so, because I had to advise my Council with regard to a policy which might disagree with the Local Government Board's policy. E

2761. This hospital served only particular districts, I understand?—Yes.

2762. Have you any record showing from what part of the district the cases came?—Yes, I have, but I have not got it here. F

2763. But you see that is most important?—If I had all the records on which this opinion is based here, I should have had to have all the books from my office in this Court.

2764. Somebody must help us. This is a question of recollection on your part, going back for ten years?—No, I am telling you as a fact it is so, but I cannot give you the figures. G

2765. You are speaking now of your recollection of 1894—1895?—From information I have in my possession, I am telling you that not from my recollection only.

2766. Can you give my Lord any idea of the number of cases that happened within the quarter and a mile zone, the half-mile zone and beyond?—Yes, I can; within the half-mile zone there were four cases occurred, and within the quarter of a mile zone there is one case of this hospital. H

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2767. That is during the whole outbreak?—That is during the whole outbreak.

2768. Were those cases investigated?—Those were.

A 2769. Did you form an opinion as to the cause of infection in each case?—I formed this opinion, if you will allow me to explain the position. This was a district where they had no hospital at all. Small-pox made its appearance and the authority had a dispute with the guardians as to who should treat these cases. Before we could induce the authority to provide a hospital the disease caught hold all
B over Willenhall, so that there were as many cases in the area of Willenhall as were in the hospital during the whole time. They could not possibly make provision for all the cases that occurred in that district, not having had a hospital in the first instance to check the
C outbreak so that it got hold all over, but the incidence of the attack was not greater in the quarter and half-mile circle than in the rest of the Willenhall district.

2770. Perhaps under the circumstances one can understand that. As a matter of fact you had a number of cases all over the district outside the hospital?—Quite so.

D 2771. How soon after the outbreak was the hospital opened?—About six weeks to two months.

2772. That is hardly a case for which you would make any inference, I take it?—I think so.

E 2773. You think so?—I think so. If the hospital was a danger we should have expected a larger incidence of contact with the populations surrounding the hospital.

2774. Notwithstanding the fact that all over the district you had a number of patients being treated in their own private homes?—That would obscure any conclusion to some extent, but the fact
F remains that it was not so,

2775. Each patient then was of course a separate centre of infection?—That is so. That only applies in the Willenhall case. All the other cases we had isolated.

G 2776. I can only take one case at a time. I am taking the two cases most against me, where you had a larger hospital. The other case was North Staffordshire of 60 beds?—Yes.

2777. Is that the case—in which you say there were four cases, two in the quarter-mile and one in the half-mile?—Three in the quarter-mile and one in the half-mile.

H 2778. When was that hospital erected? That was the temporary hospital which has not yet been converted into a permanent one?—No, the buildings that stand there now will form part of the permanent ones: the buildings about to be erected are an administration block and offices.

I 2779. I only wanted to identify it?—Yes.

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2780. When was the outbreak there ?—During 1902 and 1903.

2781. And how many cases had you to treat ?—260.

2782. How long did it last ?—Over 12 months.

2783. And you would have perhaps about 40 at a time on the average roughly ?—I can give you the actual figures. 41 was the maximum number in the hospital at the time. A

2784. Then I was not far wrong ?—No.

2785. Does that serve a large district ?—It serves a population of 300,000.

2786. That is a case in which only 30 beds were provided—is that the case ?—You mean now being provided. B

2787. Those were extra beds, were they ?—No, we had to overcrowd them on this occasion.

2788. Then taking the building as it stood at the time it was being used for this outbreak, it complied with the requirements of the Local Government Board ?—Yes, the site complied with the requirements. C

2789. Tell me how many acres does the building stand upon ?—The enclosure is on about $4\frac{1}{2}$ acres. Then there is an area beyond that of $2\frac{1}{2}$ acres adjoining it, on which the sewage disposal will be connected. D

2790. So that you will have seven acres for hospital purposes ?—Although not enclosed.

2791. As to the Willenhall, what area have you there for your hospital enclosure ?—The Willenhall Hospital was merely a temporary arrangement. It consisted of existing buildings which were taken over and converted into a hospital. E

2792. Just for this temporary outbreak ?—Yes, they had not a hospital.

2793. Mr. Justice FARWELL : Is that surrounded by other buildings ?—Yes, there were groups of houses, exceeding 200 considerably, within 250 yards. F

2794. They usually do not stand on a very large amount of ground ?—It so happened that there was waste from mines on this place, and it was not suitable for buildings, so that the buildings came quite close up to the hospital, but not quite in touch with them. G

2795. Willenhall is in the Black Country, is it not ?—It is, my Lord.

Mr. UPJOHN : The new policy, as I understand it, is to unite the districts and to have larger hospitals ?—Yes. H

2796. And those, I suppose, will stand on a much larger enclosure ?—I ought to say larger hospitals than any of these

individual hospitals, but a smaller number of beds than the total of these hospitals represent. February 15, 1904

2797. Yes, I think I gathered that from what you said?
—Yes.

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A 2798. What is proposed now for the hospital?—We purchased a large area of land there.

2799. Can you give me the acreage?—Getting on for 60 acres. The sole reason for that was that we could not get a smaller portion; the owners would not sell.

B 2800. It is a good thing for a small-pox hospital?—Certainly, but the enclosure will only be 40 feet from the outside of the building. The enclosure round the hospital will be erected at only 40 feet distance from the buildings.

C 2801. But beyond that there will be vacant land under the control of the authority?—Under the control in the sense that it is not fenced in.

2801A. But it is upon land belonging to them. Anybody who goes there will be a trespasser?—Well, I suppose he would.

D 2802. I just want to ask you this question on that. As I understand, this south hospital proposal is to have a building which will contain 40 beds—that is a permanent building?—Yes.

E 2803. And then beyond that you have got out the foundation and concreted and made such a preparation that in an emergency you can quickly put up another building, which will contain 32 more beds?—Yes.

2804. That is now a very usual and provident way of proceeding, is it not?—Yes, that is an economical way of proceeding.

F 2805. The permanent hospital is a sort of nucleus of the provision that you make for treatment in the case of an outbreak?—Yes, but it is a very large nucleus.

2806. You mean 40 beds?—Yes.

2807. That will serve a large district?—Yes,

2808. And the same in the intended north hospital. Is that so?
—That is so.

G 2809. What is the area of the enclosure in the north hospital?—About $4\frac{1}{2}$ acres—there are 7 acres altogether.

2810. When you put up your additional building are you going to enlarge your enclosure?—No, not the area.

H 2811. Now you say that the small-pox hospital is not a source of danger if properly managed, but, human nature being what it is, it is almost impossible to avoid danger, is not it?—I should say that it is not “almost impossible.” They have to be carefully supervised certainly.

2812. I do not know whether you were in court yesterday when

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I read a passage from Dr. Savill's report?—I was, but I have forgotten that particular passage.

2813. Where he refers to the folly of people and the fallibility—I say it with quite bated breath—even of hospital staffs. I think the only copy in court of that is on the bench. It is, if I remember rightly, the Blue Book, appendix 5, relating to the Warrington case. (Book handed to the learned Counsel). A

Mr. MACMORRAN : I think you will find it on page 195 of the Shorthand Notes. It begins "Finally."

2814. Mr. UPJOHN : Dr. Savill was a very experienced gentleman?—Yes. B

2815. I say that quite ungrudgingly. He did not hold the theory of atmospheric conveyance?—I cannot say whether he did or did not.

2816. I gather he did not, but he says—"The question of whether small-pox will spread through the area to a distance is from a practical point of view a thing of very practical importance since in consequence of the ignorance and foolishness of patients and their friends"—I suppose no amount of care on the part of the staff will completely counteract those two qualities?—Of course, no one could guarantee provision against it. C
D

2817. "And the inevitable fallibility of members of the staff of the hospital"—you cannot guarantee against that?—Not against fallibility.

2818. "It is very difficult, at least it would seem so, to prevent a highly infectious disease such as small-pox being spread around a hospital by these means"—now do you agree with that?—Yes, difficult, only it is done. E

2819. Very difficult?—It has been done, you see; it is done.

2820. For the most part your hospitals have been small?—The danger according to the recognised authority, in the point of view of hospitals, is five persons. F

2821. You agree that there is danger?—No, I do not agree. That is the suggestion of the Local Government Board. The suggestion of Dr. Thresh, I believe, is 30. G

2822. You said it was recognised that there was danger for five?—No, the Local Government Board has attributed danger in the case of five.

2823. I rather wanted to ask a question on your side about that hut. I will venture to ask you a question or two about it. But with regard to Dr. Savill's case before we leave that "It is very difficult, at least it would seem so, to prevent a highly infectious disease such H

as small-pox being spread around a hospital by these means" ?—I should not say it was very difficult. One would hardly be justified in placing these hospitals anywhere if it was very difficult.

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Mr. Justice FARWELL: He qualifies it by saying that "at least it would seem so."

2824. Mr. UPJOHN: I read that my Lord, "In selecting, therefore, a site from the isolation of this disease it is well on these grounds to choose one some distance away from a densely populated area." Do you agree with that ?—Yes.

B 2825. In selecting a site for the hospital the object should be to minimise every risk ?—Certainly.

2826. I am sure if you were selecting a site—whether you agree I do not know and I am not going to ask you, because I am not going to ask my Lord to decide the point whether you do or do not agree with this view as to the atmospheric dissemination of infection, you would probably agree with me that no gentleman in selecting a site ought to let that view—which is held by a very large body of eminent persons—out of sight ?—Of course they ought not to overlook that view, but at the same time the difference of opinion is so great and the preponderance of opinion in my opinion being the other way, it ought not to weigh very heavily with an authority and involve an authority in large expenditure for that reason only.

2827. So far as reported cases go, the conclusion on the part of the investigators in every case I have seen, except Warrington—because in Warrington the hospital was so much in the centre of the population that you did not want any theory to account for it. It was that the hospital had acted as a centre for the dissemination of the disease ?—I do not think Dr. Bridges agreed with that in the case of Fulham. I beg your pardon, I was there thinking of aerial convection.

2828. Dr. Bridges did agree ?—Yes, he did, I beg your pardon.

2829. I will not trouble you about it, because we know his views ?—Yes.

2830. But in every case, except Warrington—where, as I say, it is Dr. Savill's report—Dr. Savill says that it is not necessary to consider it at all, but in every other case others who investigated it on the spot did come to the conclusion ?—You are talking now of the investigations conducted by the Local Government Board.

2831. Sometimes by the Local Government Board, and sometimes by independent persons being medical officers of health ?—Then I cannot say by any means in every case.

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2832. Will you name me one case to the contrary?—I have named 17 cases this morning.

2833. I was putting reported cases of outbreaks where there has been a special investigation for the purpose?—These have been specially investigated for the purpose. I had a very grave responsibility placed on my shoulders. I had to advise my council with regard to their policy having regard to the peculiarity of the county, that is to say, the densely populated character of the north and south, and I had to take into consideration the question of the danger of the proximity of the population. Therefore I was very careful to get all the details I could with reference to each outbreak.

2834. But you have not got with you records showing the number of cases for each zone in the case of each outbreak, have you? You have given me details in two cases. Have you got the details in all the others?—No, not here in court. My office would have to be in court practically to give you the details.

2835. But in the case of the smaller hospitals was there the same examination?—Absolutely the same examination. As a rule we found no evidence whatever of cases in the neighbourhood of the hospital—no cases at all.

2836. You say no cases at all?—No cases at all.

2837. The neighbourhood of the hospital was really freer?—The neighbourhood of the hospital was freer.

2838. How do you account for that?—It does not require any extraordinary explanation. The mass of the cases occur where the mass of the population is. I can account for it in the special instances I have given—in each instance if you wish me to.

2839. No, I do not want you to go into too much detail about it. You see I rather understood you to say that in many cases the hospitals were surrounded by thickly-populated districts?—Yes.

2840. For instance, in eight cases I think you have mentioned it?—Oh, more than that.

2841. You mentioned eight particularly. That was the third figure you gave me?—Yes, populous centres.

2842. Do you say that in all those eight cases you observed that the district around the hospital was freer from infection than other parts of the district?—I say in all these cases within an area of half a mile from the hospital there were no cases, and in the cases we did inquire into they were not traceable to the hospital. An excellent instance of that was in the county borough of Wolverhampton, where the hospital site was surrounded by houses. All the figures have been carefully got out with regard to the quarter and half-mile radius.

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2843. That experience is contrary to all the cases reported on by the Local Government Board ?—It happens to be so.

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A 2844. Mr. Justice FARWELL: Is it the old South Staffordshire hospital site you are speaking of?—That is so. It is not provided for at all either temporarily or permanently. The joint area having been formed, these authorities were obliged to take over the existing hospitals until the locality could be formed.

2845. I was thinking of the Wolverhampton Hospital. Whereabouts is it ?—It is in the locality of Tetmore to the south-west.

B 2846. Mr. Justice FARWELL: In open country ?—It is close up to the town. The streets are quite up to it, and also a part of the administrative county of Staffordshire, namely, in the urban district of Tetmore.

C 2847. I cannot remember that at all ?—It is just close to the road leading towards Stourbridge.

Mr. MACMORRAN: Wolverhampton is a county borough, my Lord.

Mr. Justice FARWELL: I was trying to locate the place from my own recollection, but I do not remember it.

D 2848. Mr. UPJOHN: As to the hospital that serves Wolverhampton—Is that the Willenhall Hospital?—No, the Wolverhampton Hospital.

2849. Is that one of the 17 you have mentioned?—That makes 18.

E 2850. That probably would not be under your jurisdiction. Your jurisdiction is a county one ?—I did not mention it because it is in the county borough, but I mention it now because I had to keep my eye upon it in view of the administrative county, as our population adjoins it, and also they received cases from one of our districts.

F 2851. Then are you familiar with the character of the district there, and from what area the cases come from ?—I am, because I had reports on the subject from the local medical officer.

G 2851A. But you had not investigated them yourself ?—No, not beyond that.

2852. Can you tell me as to the Wolverhampton Hospital, what is the extent of the enclosure ?—The Wolverhampton Hospital stands in the same enclosure as the general infectious hospital of Wolver-

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hampton. I can give you the actual details with regard to distances. It is within 24 yards of a public road. It is within 62 yards of a public footpath. There are groups of houses within 70 yards—not many—but there is a large population within 220 yards.

2853. What do you call a large population?—Well, you reckon beyond the hundreds. I would talk of it in thousands if I were going to talk about it. The scarlet-fever ward is within 42 yards of the hospital. A

2854. Take the district outside the enclosure. Was any record kept as to the proportion of cases coming, say, from the quarter-mile zone as compared with the rest of the district?—I do not know whether Dr. Malet divided into quarter and half-mile zones, but he certainly, from the point of view of the danger or supposed danger, paid constant attention to and was very nervous about taking cases into this hospital. As a matter of fact he came to the conclusion—he told me as a fact—that cases did not occur in the neighbourhood of the hospital. B

2855. But you are not familiar with the facts that he did ascertain?—I did not know them step by step. Dr. Malet is a very able medical officer and I did not cross-examine him. C

2856. His opinions we cannot take unless he comes to have them tested, but he had told you facts on which you had formed an opinion?—Yes, and I was satisfied with his information. D

2857. But you did not have the facts yourself?—It did not occur at all events in Staffordshire, in that hospital. That I can answer for. E

2858. When was the outbreak at Wolverhampton?—There were four outbreaks during this period.

2859. Which period are you speaking of, the 13 years?—The 13 years. F

2860. Which was the first time?—None of them very bad.

2861. What is the greatest number of cases, do you remember?—15.

2862. During one outbreak?—No, at one time—in the hospital at one time I mean. G

2863. I have no doubt you have thought a good deal about this. Can you correlate your experience in Staffordshire with the experience of the 20 or so recorded cases in which the contrary conclusion has been come to?—I do not know that I can tell you any more than I have already done, that my inquiries had led me to differ as to the danger. H

2864. Your inquiries of course in Staffordshire?—Yes.

2865. But you had not the means, I presume, for enquiring into the other cases—London, Glasgow, Sheffield, and so forth?—No.

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2866. Except so far as the facts are recorded in documents that are open to us all?—Also from the experience I have had as to how small-pox does spread.

A 2867. It is most infectious?—Yes, and the enormous facility for contact.

2868. I do not quite know what took us off the subject, but I was going to ask about the ships at Dartford?—Yes.

2869. You have been over the ships?—I have.

B 2870. What is your explanation of the infection on the north shore?—I have not gone into the matter. I cannot offer an explanation.

C 2871. You would agree with Dr. Thresh in this, that if you are not able to stamp the outbreak out by removing all the cases to a hospital as they occur, you have to look for some constant factor without the district?—Yes, certainly.

D 2872. And if you find in one place the per thousand of cases is 120 as compared with one in the rest of the district, that is a very striking thing?—I can give you a much more striking example of that from my own experience, which is explained in an entirely different way, if you like to have it.

E 2872A. It is not that I want it, but I suppose you are entitled to put it?—Well, a tramp from a lodging house walks about the town. At the end of three days (having meanwhile gone to a chemist for medicine for an eruption that he had) he gravitates to an out-patient's room in the general infirmary, where he is shut up for an hour or two with 40 or 50 people from different parts of the area—the surrounding district. It happens by accident, more than anything else, that he is recognised as a case of small-pox in the out-patients' room. He is detained and sent to the hospital, but in order to safeguard the surrounding districts, endless trouble had to be gone to, to ensure that all the out-patients in the room with this small-pox case were re-vaccinated, and with one or two exceptions they were re-vaccinated. Now if that had not taken place the probability is that from one unrecognised case there is no knowing how many hundreds you might have got. I give you that as an example. That case was recognised only by accident.

F 2873. I do not think you have quite taken into consideration the precise point that I put to you of a constant factor which you do not find operating in any other part of the district. I mean that sort of accident might happen anywhere. When I say "anywhere" perhaps I am putting it too strongly against myself. It would only happen where there was a substantial population to be infected—a centre?—Because the population happened to be a centre for a few hours—a market town might account for it.

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2874. Exactly, but in a little place like Purfleet if you find an outbreak going on for about 15 months, I think Dr. Thresh said there is always an excess of 100 per cent.—?—To take the percentages in connection with a small place like that is very misleading. In order to be of any value you would have to extend the period for centuries in a population like that—not take one or two outbreaks. A

2875. Take the case of Orsett Union, that is a fairly large place. There, as compared with the rest of the county, it is three to one?—There are many reasons to account for that. I can give you an instance in our own county where one district of 7,000 of a population has had a great preponderance of small-pox. B

2876. For how long?—Repeatedly. It is constantly recurring there, but it is entirely explained by the fact that tramps continually pass through there.

2877. Did any such explanation occur in the course of the case of Orsett?—I cannot tell you. I have not enquired into it. C

Mr. Justice FARWELL: The proximity of docks was suggested which would be somewhat analogous. However, there is no use arguing with the doctor about it because he has not inspected the case. D

Mr. UPJOHN: Your Lordship remembers Tilbury Dock was six miles away.

Mr. Justice FARWELL: The people working there go backward and forward.

2878. Mr. UPJOHN: A special investigation was made as to that. Your Lordship will find that in Dr. Thresh's report?—We have cases jumping 20 miles—it so happens with the communication there is between the two centres, that business or any other circumstances may attract the people. E

2879. The case of London is also very striking?—In what respect, the incidence round the hospital. F

2880. Yes?—Yes, it is striking certainly.

2881. The districts that were healthiest before the hospitals were established happened to be, some of them, districts in which hospitals were placed?—Yes. G

2882. Do you remember when the hospitals were established. It was the end of the seventies, I think?—Yes.

2883. At all events, in the course of a very few years they were degraded from that position to a very low position?—Yes.

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2884. When the hospitals were closed I think all except one had recovered their position?—So I understand.

2885. Then again, compare London with the provinces. London used to be before the hospitals better than the provinces as a whole.

A The result of the establishment of the hospitals was that it was degraded, and became, I think, seven times worse. The result of shifting the hospitals out of London to the ships was that London has recovered its position as compared with the provinces as a whole?—I do not say that it is the result. It is recorded as a fact. I do

B not say that it is the result of the hospitals.

2886. No, I do not want to entrap you in that way. It is post hoc, at all events?—Quite so.

C 2887. Can you give any reason why it is not propter hoc?—Only because so many things have to be taken into account. No one can say that there is no danger in small-pox hospitals; and if the hospital is placed in a very populous centre that danger must be increased.

2888. It becomes a very substantial danger?—In certain circumstances probably without very careful administration.

D 2889. So careful that you have to put human fallibility out of question?—You cannot put human fallibility out of the question, I think.

E 2890. Then to that extent it is a source of danger?—Yes, in the circumstances. Of course the danger is lessened in accordance with the circumstances.

F 2891. It is no use pursuing this. I have put my points to you and you have given me your answers and there is no use pursuing it. You have mentioned that in some cases the hospitals in Staffordshire are near workhouses, and I think in some cases they adjoin scarlet fever hospitals. Was there no infection at all of small-pox in the workhouses or scarlet fever hospitals?—Absolutely no infection.

G 2892. Can you tell me anything as to the vaccinal condition of the occupants of the hospital or the workhouse. When I say hospital I do not mean small-pox, but scarlet fever?—There would be no difference. They were taken in for the general population and in Staffordshire vaccination as a rule is very inferior until quite lately.

H 2893. Is there any record of the vaccinal condition of the people say in the workhouse?—No, no record. It is a shifty population. You cannot keep a record of that.

2894. And the same of the scarlet fever hospital?—I do not take it that there is any difference. They are poor people and vaccinal record amongst the poor has been a bad one up till recently in Staffordshire.

2895. You agree with me that there are many reported cases of

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contagion from small-pox pavilions to a fever ward?—Oh yes, I have no doubt there are.

2896. Then I will not trouble you with the details. I think you mentioned a question about beds. I think you mentioned that the Local Government Board had reported infection where the number was only five?—That is in Mr. Power's report. A

2897. I have not got the figure 5, but he goes through the matter historically. When the admissions were 13, 13 and 18 in successive fortnights—the excess appeared?—Yes.

2898. This is a matter of history that I have not put to any previous witness; but as a matter of fact, after the report of the Hospitals Commission, and before the Metropolitan Asylums Board determined to take the hospitals out of London, they did try the experiment of limiting the number of admissions, and making their administration very much more stringent, did they not?—Yes. B

2899. For instance, there was a real limit of admissions to 25 made in October, 1884?—Yes. C

2900. And, in fact, the admissions were kept under 25?—Yes.

2901. And in Fulham 20?—Yes.

2902. And notwithstanding that, the special incidence of the attack right round the hospital was still noticed?—Yes. D

2903. So that at all events a hospital of 20 beds, according to your experience, is capable of acting as a source of danger?—Yes, according to that experience.

2904. There is only one other matter I want to put to you. I am sorry to have detained you so long, but I put to you that there is more value in affirmative evidence than in negative evidence?—Not in this cast most distinctly. E

2905. Why not in this case?—Because in the case of negative evidence the fact is there. In the case of affirmative evidence explanations are innumerable. F

2906. The explanation you know in the case of affirmative evidence may also be used in the other case. It may not have been noticed, there is always an unaccounted for margin, is not there, in this way. Infection may have happened within a district, and the person may have gone beyond the district to his home and so the case would be put down to a more remote zone when it ought fairly to be attributed to a nearer zone?—No, we trace all over the county and, in fact, we trace over different counties. G

2907. It is impossible to trace it. A man is living beyond the half-mile zone—either business or chance takes him near the hospital, and he there, let us assume, takes infection. Then he goes back to his home beyond the half-mile zone. In tracing out his case it might never come to your knowledge that he had been near the hospital?— H

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If he worked near the hospital it would certainly come to my knowledge.

2908. If he had a permanent occupation it would?—Yes.

A then. 2908A. Supposing it was a matter of chance?—No, it would not

2908B. Take the case of a man who is a locomotive driver on the Great Northern Railway at Bestwood, and who takes his engine to and fro along the Great Northern line in front of the hospital to the colliery just to the north, supposing he was doing that on the 18th,

B 19th, 20th, 21st and 22nd of January, and has developed small-pox?—Would you give me the dates when he was driving.

2909. From the 18th to the 22nd he has developed small-pox?—Developed small-pox when?

C 2910. That means within the last day or so?—It is very important to know the day if you are going to ask a question upon it.

2911. This being sent us by telegram, assume that it is within the last two days?—Assume that would have been on the 13th.

2912. Assume that it is discovered that he has got small-pox?—Yes, quite so.

D 2913. That is the date of the discovery when he actually took it?—I do not know what you are asking me about.

2914. What I was going to ask you was this. If you were investigating that case would you attribute any weight to his having worked his engine in the immediate neighbourhood of the hospital on those days?—Most certainly not.

2915. You would not?—Most certainly not.

F 2916. Why not?—I should enquire for another reason and expect to find it, and if I did not find it I should say I had failed to find it. I would not attribute it to the hospital if he was running his engine past the hospital on certain days.

2917. You would put the hospital out of it?—Certainly.

2918. You would look for other reasons?—Certainly.

G 2919. If you could not find other reasons?—If I could not trace it I should say it was untraced, but I should not trace it to the hospital certainly.

2920. That is all I wanted to know?—The same would apply to the cases of ships passing along an infected centre on the Thames.

2921. Are you acquainted with the Liverpool history?—I do not know what you are referring to.

H 2922. It was in the evidence of Dr. Hope on Saturday, and I have had an opportunity of doing since what I had not an opportunity of doing whilst he was in the box—of looking at the history of Liverpool. What he said rather struck me with regard to the Netherfield Hospital. This is in the answer to Question 2264: “This

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Netherfield Hospital around which so much small-pox arose has not been used for small-pox for 25 years." I do not know whether you happen to know, as a matter of history, that in consequence of the incidence of small-pox round that hospital the new hospital was established. If that is a matter of history, it is a matter of history; I do not know it—

2923. I daresay you are familiar with Appendix 8 to the Royal Commission on vaccination. It deals with several outbreaks, and amongst others, Liverpool. Dr. Taylor, who was then the medical officer, said on page 32: "The increase of small-pox in the immediate neighbourhood of the hospital was much to be regretted, from whatever cause it originated; but as good is said to come out of evil, in its inception it led to the Workhouse Asylum Hospital on the Park Hill estate." That is the Park Hill Hospital he is speaking of?—Quite so.

2924. "And the report is during 1876 and 1877 when cases were sent to the Mill Road Hospital, that in 1881 when they went to the Netherford Road, again in 1883 when Mill Road Hospital received them, the incidence of small-pox was notably large in the area round those hospitals. Therefore in the last-named year the Corporation took steps to establish a temporary hospital for small-pox on the confines and as far removed as possible from the inhabited dwellings"—that is a matter of history is not it?—No doubt it is a matter of history

Re-examined by Mr. MACMORRAN.

2925. There are only two points I wish to ask you about. My friend has asked you about the case of a man living outside the half-mile radius who contracted the disease within, and went back home and was reported as having had the disease outside the half-mile radius. That may happen to people who live within the half-mile radius and who go outside?—Certainly.

2926. With regard to Wolverhampton you have told us that that is a county borough?—Yes.

2927. And that, of course, as a borough, is not within your jurisdiction at all?—No.

2928. But your district actually comes up to the Wolverhampton Hospital?—It does.

2929. In so far as there is a quarter of a mile and half a mile area within your own district, do you know, of your own knowledge, that no cases have occurred?—I do know that no cases have occurred.

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2930. Mr. Justice FARWELL: I wish you to tell me what is the alternative. I suppose that treatment in the house is a practical impossibility?—That certainly would be very dangerous. The result of that is shown in the example I gave at Willenhall.

A 2931. Then the next is a hospital in a more or less open area, or in the centre of the town, or quite out in the country?—That is so. With reference to the South Staffordshire Hospital, unless this area, which we hope to get the Local Government Board to approve, is the area selected, there is no other alternative than that of dotting
B hospitals round the outside populous area having a continuous line of streets of 20 miles in the outside rural districts, and in some cases in other counties altogether. This is the only spot within that populous area where the hospital can possibly be put up.

C 2932. Does the aggregation of cases in considerable numbers increase the risk in your opinion?—That is to be considered in various points of view. If you have a large number of cases, of course the poison is concentrated; that is to say, there is a larger amount of it. But on the other hand you have a correspondingly large staff, and the chances are that in a large hospital the administration will be more
D efficient, because you will have a resident medical officer (as you have here), than in case of a small-pox hospital.

2933. Take a hospital with 40 beds. Do you call it a large or a small hospital?—In that case I call it large, because when any number of cases over those occur we should have a resident.

E Mr. Justice FARWELL: Have you many more witnesses, Mr. Macmorran? Mr. Upjohn called what I may call the usual class evidence—that of gentlemen of very large experience. The usual rule is to have two experts on each side.

F Mr. MACMORRAN: It is very difficult for me to say. So far as I am concerned I can examine my witnesses very shortly, but I fully recognise that my learned friend may want to cross-examine them at some length.

G Mr. Justice FARWELL: There is no sort of doubt that there is a very large body of excellent opinion both ways. I do not think that any one can contest that, and I do not know that you add to it by piling up the number of witnesses. The ordinary rule is to limit it to two experts, and I do not think I should depart from that rule. If your experts are only going to state their general opinion, I do not think it will be necessary to take any more of them, as otherwise I
H might be here for weeks, and you might call hundreds of doctors on each side. As it is, I have got the fact that there is a conflict of

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medical opinion on both sides, and I am not going to say which is right.

Mr. MACMORRAN : I should like to call the Port Sanitary Officer of the City of London.

Mr. Justice FARWELL : Yes, certainly. A

Mr. MACMORRAN : And the other witnesses I have to call are witnesses who have examined this site.

Mr. Justice FARWELL : By all means call them and let them give their opinion as to this site.

Mr. MACMORRAN : If your Lordship will allow me I will B
 take Colonel Notter first.

Col. J. G. Notter.

COL. JAMES GRAY NOTTER, sworn.

Examined by Mr. MACMORRAN.

2935. Are you a Master of Arts and a Doctor of Medicine and a Master of Surgery ?—I am. C

2936. And you hold a diploma in public health ?—I do.

2937. Were you lately Professor of Hygiene in the Army Medical School ?—Yes.

2938. And I think you were acting sanitary officer in the South African Field Force during the late war ?—Yes. D

2939. And you are Examiner in Public Health of the University of Cambridge and the Victoria University ?—I am.

2940. Have you had a long experience of small-pox and other epidemic diseases ?—I have had 38 years' experience.

2941. At the request of the Medical Officer of the City of Nottingham did you go and inspect the Bulwell Hospital ?—I did. E

2942. When did you see it ?—On the 16th December.

2943. And you saw a road in front of the hospital ?—I did.

2944. And were you informed that it was used by persons working in the mines and at the ironworks passing morning and evening ?—Yes, to and fro. F

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2945. You saw the nature of the fences?—I did.

2946. And you saw the stream at the back surrounding the enclosure?—I did.

A 2947. With the allotments over on the other side of the stream, and so on?—Yes.

2948. Then did you see also the surroundings?—Yes, I walked round.

B 2949. Now, speaking of the site, do you say that if the hospital which is now there is well managed, properly conducted and properly supervised, there would be any danger from the hospital to the surrounding neighbourhood?—Absolutely safe.

Mr. MACMORRAN : After what my Lord has said, I will not ask for your general opinion.

Cross-examined by Mr. UPJOHN.

C 2950. You will agree with me, I think, that sites for small-pox hospitals require a much larger space round them than sites for other infectious diseases hospitals?—Perhaps so.

2951. Do you doubt it?—Well, I will admit that they do require it.

D 2952. That is your opinion, is it not?—Yes.

2953. Small-pox hospitals are apt to disseminate small-pox, are they not?—If improperly managed.

2954. Not otherwise?—I do not think so.

E 2955. Their sites should really be places as far distant from any populated neighbourhood as the conditions of accessibility permit. Is not that so?—We would not put any hospital in any neighbourhood if we could avoid it.

F 2956. Will you answer the question—subject to the conditions of accessibility should not a small-pox hospital be placed as far distant from a populated neighbourhood as possible?—I do not think so.

2957. You do not agree with that?—No.

2958. Of course small-pox patients we know travel well?—Yes, they do.

G 2959. With regard to the Local Government Board requirements, do you consider that they are necessary or unnecessary?—I consider that the Local Government Board have been actuated by two motives.

H 2560. You shall explain presently; but I only want you to answer the question. Do you consider they are necessary or unnecessary?—I think they are necessary inasmuch as they allow for any lapse in strict administration.

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2961.—That is all?—That is all.

2962. Any greater stringency would be unnecessary?—Any greater stringency would be unnecessary.

2963. You have been good enough to instruct persons in the theory and practice of hygiene, have not you?—Yes. A2964. I will read a passage from the 1900 edition, page 530, of a work written by yourself and Mr. Horrocks: "Sites for hospitals designed to receive small-pox require a very much larger space about them than sites for other infectious diseases hospitals. Small-pox hospitals are apt to disseminate small-pox, and their sites should therefore be placed outside towns, and, indeed, be sort of places as far distant from any populated neighbourhood as conditions of accessibility permit." That is your opinion?—Yes, fairly. B2965. "The Local Government Board have suggested that with the view of lessening the risk of infection a local authority should not contemplate the erection of a small-pox hospital, first of all, on any site where it would have within a quarter of a mile of it as a centre either a hospital or a workhouse, or any similar establishment, or a population of 150 to 200 persons; secondly, on any site where it would have within half a mile of it a centre of population of 500 or 600 persons, whether in one or more institutions or dwelling houses." I notice you put 150 to 200 and 500 to 600. "It must also be understood that even when the above conditions are strictly fulfilled there may be circumstances under which the erection of a small-pox hospital should not be contemplated. Cases in which there is any considerable collection of inhabitants just beyond the half-mile zone should always call for especial consideration." That is your view?—I may say, my Lord, that those books are written, of course, for the purpose of students, and they have the maximum amount of precautions in them. They are textbooks written for students and they contain the maximum amount of information gathered together for the purposes of reference. C
D
E
FMr.
H. R. Kenwood.

MR. HENRY RICHARD KENWOOD, sworn.

Examined by MR. PARKER.

2966. You are a Professor of Health at University College, London?—I am. G

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2967. I think you have been recently appointed to that position ?—That is so.

2968. But you were acting-professor for some years prior ?—That is so.

A 2969. And you are Lecturer to the Sanitary Institute and to the National Health Society and you are the author of various works on hygiene ?—Yes.

2970. You are the Medical Officer of Health for the Borough of Stoke Newington, and the district of Finchley ?—Yes.

B 2971. And I think you give lectures on the subject of Public Health for the University ?—That is so.

2972. Have you been, at the invitation of the Medical Officer of Health for Nottingham, to see this Bulwell Hospital—the subject of this action ?—I have.

C 2973. And did you inspect the hospital ?—I did.

2974. And its surroundings ?—And its surroundings.

2975. And did you notice the road ?—I did.

2976. And the method of the construction of the palings ?—Yes.

D 2977. And the inside fence ?—Yes.

2978. And the river side—did you go there ?—Yes.

2979. Did you ascertain, or were you informed, as to the population of the immediate neighbourhood ?—I was informed as to the numbers, and I inspected the immediate neighbourhood.

E 2980. And it was to the effect of the evidence you have heard in court ?—Yes.

2981. Speaking with regard to your experience, will you tell his Lordship whether you conceive that this hospital, if properly managed, will be a centre, or nucleus, for the spread of infection in the neighbourhood ?—I hold a very emphatic opinion upon that : that it will not act as a source of infection, if properly managed.

F 2982. Do you consider that passers along the road run any material risk ?—Not the slightest.

G 2983. Or people residing in the neighbourhood within the quarter-mile limit ?—I do not think the residents will if the hospital is properly managed.

2984. And with regard to the work people, I think you have been told that numbers of work people pass along. Do you consider that there is any risk with regard to them ?—None.

H Cross-examined by Mr. UPJOHN.

2985. Is it not the fact that the virus of small-pox infection may be conveyed a considerable distance through the air in the dry epider-

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miological cells, and the crust of the dry cells from the small-pox patient?—Yes, if no means are taken to prevent that.

2986. You have studied, as all you gentlemen have done, the London cases?—I have.

2987. From the beginning in 1880 and continuing down to the removal of the hospital from the metropolitan area?—Yes. A

2988. Is it not the fact that “the exceptional incidence of the small-pox in the immediate neighbourhood of some of the London small-pox hospitals, in which were formally treated during epidemic periods large numbers of cases can admit of but one explanation, namely, that when a sufficient number of cases in the acute stages are collected together in one building on a small area of ground, the hospital becomes a centre of infection to the surrounding neighbourhood.” Is not that so?—That is so. When the sufficient number of hospitals are faultily administered as those were. B

2989. You do not say so in your book?—No, but I am referring to the London experience there. C

2990. But there is nothing about faulty administration you know —“can admit of one explanation, namely, that when a sufficient number of cases in the acute stages are collected together in one building on a small area of ground, the hospital becomes a centre of infection to the surrounding neighbourhood.” That was your opinion when you wrote your practical work on “Hygiene,” of which I have an edition of 1901?—That is the opinion certainly warranted by the early London experience; but I should like to say that it is not comparable to the hospital with which we are concerned now. Those were very large hospitals, and I mention there “in a sufficient number of cases,” by that I meant in a very large number of cases. D

2991. What number of cases do you mean?—That has not been defined, but I have practical experience up to 40. E

2992. Dr. Reid is a very experienced gentleman whom we saw just now, and he pointed out, or rather agreed when I pointed out, that with reference to London hospitals, particularly the Fulham Hospital, the number of beds occupied sank below 20, and yet you seem not so, and yet the same thing was found to go on?—I do not attach very much importance to that evidence. F

2993. To what evidence?—To the evidence with reference to the Fulham Hospital acting as a centre with these small number of patients in conjunction there. G

2994. “In the diagram (figure 82) taken from Mr. Power’s report to the Local Government Board, 1855.” That is the very report, is it not, which mentions the limit of the number of beds—“the neighbourhood around the Fulham Small-pox Hospital is divided into special areas by circles of a quarter, a half, three- H

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quarters, and one mile radii. In these special areas the figures show the percentage of houses in each area invaded by small-pox in the period May 25th, 1884, to September 26th, 1885." You do not throw any doubt upon it there, do you?—That is an extract from

A the report.

2995. No, indeed, it is not; it is your statement: "The extreme incidence of the disease in the quarter-mile circle surrounding the hospital is at once apparent, and is attributed by Mr. Power to the aerial diffusion of the infection." So when you are quoting what may

B be a matter of opinion you mention Dr. Power. Do not you refer also to Dr. Barry's report on the small-pox hospital of Sheffield, and do not you agree in that case—I will read you what you say about it: "Dr. Barry's report on the small-pox epidemic at Sheffield"—

C no, I will read the opinion, to be quite fair to you: "Whether small-pox in these cases was transmitted aerially or by personal communication cannot be decided, as the faulty administration of the hospital may have allowed the transmission of small-pox by the persons of the hospital, officers or visitors." That is suggested in the Sheffield report, is it not?—That is so.

D 2996. Then you go on to adopt Dr. Arnold Evans's views as to the Bradford Fever Hospital?—I do not adopt them.

2927. You go on to state them without disagreeing with them.

At page 489 you point out "As regards the number of cases aggregated in a hospital necessary to enable it to exert an influence on the surrounding neighbourhood, Dr. Power's reports of 1884 and 1885"—I have read to you the report—"shew that this influence

E was exerted when the number of acute cases had been restricted to 20"?—In the report it showed that. May I say with reference to text-books of that nature, that one has to collect facts,

F and when matters are sub judice—very much under discussion, as such a matter as this is, one does not as a rule (and I think it is a good point with Dr. Parkes and myself) express opinions. Each of those extracts you have read have been extracts from the reports of these individuals there which is as strong

G in favour of the hospital sometimes as anything is against it. I do not think anywhere (I know I have not) we give expressions of opinion of a definite nature on that subject.

2998. Then writing a practical series you have endeavoured to put before the reader and before students and practitioners, not so experienced as yourself, these statements, though you say now they ought not to entertain them or give great weight to them?—We gave what we thought was a fair statement of the views pro. and con. without giving our own opinion.

H 2999. Will you give me the con.?—You have given a good deal of the con. without giving anything to the contrary. For instance at page 500 we say: "One consideration which causes many to doubt

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- the correctness of the aerial convection theory is the immunity from attack constantly observed in the large numbers of presumably susceptible individuals living near small-pox hospitals.”
3000. One moment, I am afraid I have not that ?—It is page 500 the first paragraph. A
3001. What is your edition ?—Mine is the latest, 1902.
3002. I have the 1901 edition ?—Mine is at page 500. It is a different subject altogether.
3003. Here is the book. Where do you say that ?—“ Dr. Power’s views, then, are thought by many to be adequately explained by the possibilities of direct or mediate infection from the hospital.” B
3004. Yes, I have it. You say, “ Moreover no infection has, so far as known, spread to the passengers in boats and ships passing up and down the Thames at Long Reach, where the London small-pox ships are now moored, the explanation being that in this case the element of direct or indirect personal communication is non-existent” ? C
—Yes, that is it. I think it is a great argument.
3005. “ Moreover, no infection has, so far as known, spread to the passengers in boats and ships passing up and down the Thames at Long Reach, where the London small-pox ships are now moored, the explanation being that in this case the element of direct or indirect personal communication is non-existent.” Then, “ Dr. Power’s views, then, are thought by many to be adequately explained by the possibilities of direct or mediate infection from the hospital.” I mean you assume that in this case the element of direct or indirect communication could not be included ; and if you exclude that, then your observation fails ?—Yes. D
E

Dr.
W. Collingridge.

DR. WILLIAM COLLINGRIDGE, sworn.

Examined by Mr. MACMORRAN.

3006. Are you a Master of Arts and Doctor of Medicine ? F
—Yes.
3007. And you held an appointment in the department of public health in the University of Cambridge ?—Yes.
3008. You were Medical Officer of Health to the Port of London from 1880 to 1891 ?—I was. G
3009. And you are now Medical Officer for the City ?— Yes.

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3010. And you were formerly Examiner in State Medicine in the University of London?—Yes.
3011. Have you had long experience in connection with small-pox?—I have.
- A 3012. As the Port Medical Officer, I suppose you saw a good deal on the ships?—A considerable amount.
3013. And you are, of course, acquainted with the hospital ships in the lower reaches of the Thames near Grays—opposite Grays?—Yes.
- B 3014. During the time you were medical officer of the Port did you ever come across a case of infection from the ships or trouble to the ships in passing up and down?—I have had cases of small-pox which I have directly connected with the ships beyond a doubt, but these are vessels not from passing up and down, but vessels which
- C have called and been in immediate contact with the ships—no other vessels.
3015. No other case?—No other case.
3016. During the last epidemic you were not concerned with the Port then?—I was not.
- D 3017. So you do not know anything about that epidemic?—No.
3018. You remember a former epidemic in which you were Port Medical Officer?—Yes.
- E 3019. During that epidemic is it the fact that complaints were constantly made to you about communication between the ships and the shore?—Yes, that is so; those complaints commenced as soon as the ships were taken down. The first ship was taken down in 1882, and they continued at intervals for 15 or 16 years certainly.
3020. Now coming to this hospital at Bulwell, have you examined
- F that?—I have.
3021. And the surroundings?—I have.
3022. In your judgment is that hospital, if properly administered, a source of danger or a cause of danger in the immediate neighbourhood in passing or re-passing in any way?—No, it is not, in my
- G opinion.

?
The training
Ship moored
on the other side
of the River

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Cross-examined by Mr. UPJOHN.

3024. I did not quite catch your dates. How long have you been connected with the City and the Port?—The Port from 1880 to

1891—21 years, and since that date in the City.

H 3025. With regard to your not having heard of cases of small-pox being caught from the small-pox ships except where the vessels

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touched, you would hardly expect to find it, would you?—I certainly should, yes.

3026. Just let us see. Of course, if the infection happened with an outward-bound vessel you would not?—Of course, almost certainly.

3027. Why?—Because when these vessels, in the majority of cases return, we hear first of all from a foreign port whether they have taken any disease, through dealing with foreign vessels. If the vessel is coming to any home port then there is a system of absolute inter-communication between these home ports, and it is not possible for cases of infectious diseases to be communicated from one port to another within the United Kingdom without the port of origin hearing of it. That is most complete. A

3028. Have you never had any complaint or any communication from the foreign port, or a home port to which the vessel was bound, of any case of small-pox?—Oh, constantly. B

3029. Then when you get the infection, what do you do—anything?—Certainly; first of all we look up the point as to whether any infectious disease was found. You are dealing with infectious diseases generally, I suppose? C

3030. No, small-pox?—As to whether any small-pox is on a vessel while in the Port of London, or any other port of which we have knowledge. D

3031. Beyond that you cannot go?—We can trace it to a certain point.

3032. But not beyond the point you have mentioned?—Clearly. E

3033. How far beyond that?—I say clearly it is not possible to go beyond that in the majority of cases; that gives the absolute information in the majority of them.

3034. Of course, it is just the margin that we really consider, is it not?—I do not know. The margin, of course, of untraced cases is a varying one, small, but it exists. F

3035. It is large in the cases you have to deal with where you simply get the communication from a foreign port. Take the case of a medical officer of an inland town who can go and make his enquiries at the man's home and of his employers and friends, and so forth?—It possibly is larger, but it is still small. G

3036. Then with regard to an outward bound vessel you see that vessel might well leave London before the disease develops?—Certainly.

3037. Then the same thing would occur?—Yes, but you must remember this. In the course of a vessel leaving London in a short time within the incubating period, in almost all cases the vessels are going to ports a very short distance from London, and they would return within a short time. Vessels of long passages stay a long time in London, you may take that as a general rule. H

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3038. That is not so with the great liners?—Yes.
3039. I thought they cleared out very soon?—No.
3040. Surely, take the P. & O. steamers, they clear out pretty quickly, do they not?—Not within the incubation period of small-pox as a rule.
- A 3041. We will not pursue that. You say in 1882 the first ship was established off Dartford?—Yes, that is so, that was the "Atlas"; she went out from Deptford.
- B 3042. After that, for 16 years, you had complaints?—Yes, I had the first complaint in 1882, and I reported that at the time, and I have an extract from my report.
3043. Did the complaints go on for all these 15 years?—Yes, 15 years.
- C 3044. That was about the last, was it?—Probably the last.
3045. But that was as to a communication between the ships and the Kent shore?—No, the Essex shore. The communication between the ships and the Kent shore was the Asylum Board inter-communication.
- D 3046. Of course, they had there inter-communication, but I thought the communication of which you complain was between the ships and the south shore?—No, the north shore.
3047. Now I put it to you that the result of your complaint was that the management on the ship got much stricter?—Yes.
- E 3048. And the instances of communication got fewer and fewer—those that came to your knowledge?—Those that came to my knowledge yes, that is the fact.
3049. In 1896 or 1897 practically you ceased to hear of any such cases?—I heard of nothing after 1896.
- F 3050. Probably it is within your knowledge what was mentioned by Dr. Thresh (I do not like to say how many days it is ago) that when the epidemic of 1891 broke out very ample regulations were made by the Metropolitan Asylum Board?—Possibly, but they certainly were not strict enough to prevent inter-communication.
- G 3051. How do you know?—Because I have an intimate knowledge of what takes place on the river, what they will do, and the difficulty.
3052. You had in 1901 and 1902 no information of a communication between the ships and the north shore?—1901-2, no, I think, no knowledge at all.
- H 3053. You had ceased to be a port officer. At all events you had none in 1896?—That is so.
3054. If the ships in 1901-2 were a source of infection to the north shore, we will take Purfleet or the larger district of Orsett if you like, can you give any reason why the Bulwell Hospital should not be

February 15, 1904 a source of danger to the people round about it, those living round about it and working round about it?—If I assume the hospital ships were a source of danger?

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3055. Yes?—I do not assume it.

3056. But I ask you on that assumption?—If they were a source of danger, then the Bulwell Hospital possibly would be a source of danger. A

3057. Mr. Justice FARWELL : It must depend on the reason why they were a source of danger, I suppose?—Absolutely, my Lord, and that is not given. B

Mr. F. B. Lewis.

Mr. FREDERICK BECKETT LEWIS, sworn.

Examined by Mr. MACMORRAN.

3058. Are you the City Architect of Nottingham?—I am.

3059. Are you acquainted with the surroundings of the Bulwell Hospital and site?—I am. C

3060. I wish to ask you a question with reference to the road in which it is situated. Is that a main road?—No, it is not a main road.

3061. Is it an old forest road?—It is an old forest road.

3062. Is it the most suitable road to the hospital site?—It is the most suitable for taking patients to the hospital from the centre of Nottingham. D

3063. Is that a road which is much frequented?—Very little frequented indeed.

3064. Is it the main road from Nottingham to Bulwell?—No, certainly not. E

3065. What is your line upon which the principal traffic going from Nottingham to Bulwell follows?—Following the tram lines.

3066. Is that to the west?—That is to the west—to the hospital road. F

3067. Are there many houses upon this road?—Upon the Hucknall road.

3068. Upon the road passing this hospital—I do not know the name?—No, there are very few houses for three miles. There is practically no house. G

3069. After you leave the workhouse of the town, there are very

few houses?—Yes, certainly; and before you approach the workhouse there are very few houses. February 15, 1904

3070. With regard to the site of the hospital itself, is that point bounded on the land belonging to the corporation?—Yes, it is bounded on the south by land belonging to the corporation. Mr. F. B. Lewis

A 3071. What is that land?—Part of the old Bulwell Forest.

3072. Can it be built upon at any time?—It is not likely to be built upon at any time.

B 3073. What lies between the site of Bestwood village and the hospital?—A high railway embankment.

Cross-examined by Mr. UPJOHN.

3074. I am not sure that I quite understand the answer—that the land to the south is not likely to be built on. Do you mean near those cottages?—Between the cottages and the site of the hospital.

C 3075. Moor Bridge?—Between Moor Bridge and the site.

3076. Is that where the allotment gardens are?—No, they are further to the west.

D 3077. Just south to the hospital site you come at once on the allotments, do you not?—No, the allotment lies to the west of the hospital site.

3078. Are you referring to the part between the hospital fence and the Moor Bridge cottages?—I am.

3079. But that is a very small area indeed, is it not?—It extends to some acres.

E 3080. Some acres? My Lord has the plan. How many yards is it. From the fence to the Moor Bridge Cottages is only 92 yards. You say this is not a main road. Is that using the expression “main road” in some technical sense?—No, I am speaking of the whole length of the road from Nottingham to the hospital.

F 3081. As a matter of fact, the road from Nottingham to Bulwell that is the tram road?—Yes.

3082. At the point or soon after the point where the tramway ceases and where you go on beyond Bulwell, Bestwood turns into this very road does it not?—It turns into the road.

G 3083. So that from a point south of the hospital what you call the main road from Nottingham and this particular road unite and form one road?—I should say this forms a portion of the main road from Bulwell to Bestwood.

H 3084. That is very much what I am putting to you. The road in front of the hospital is the main road from Bullwell to Bestwood, and the country beyond Hucknall and Mansfield?—No, not Hucknall.

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Mr. F. B. Lewis.

3085. Mansfield?—If anyone chooses to drive to Mansfield they might go that way. I think probably it would be the nearest way, but practically there is no traffic.

3086. I put it to you there is a very fair amount of traffic in that direction. On one day observation was made, and there were 176 vehicles, that was a busy day, Friday; and then observation was made on a slack day to see what it was then, and there were 60 vehicles passing the hospital?—I think most of those would be Bestwood village. A

3087. The people are entitled to be protected even if they are not going beyond Bestwood Village?—Certainly. B

3088. The Corporation is entitled to let land for building in this neighbourhood, is it not?—I have not heard of it and I should if they were.

3089. It was suggested to me, but no doubt you are quite right. Have any plans been prepared for a possible extension of the hospital building or for the erection of new buildings on the site?—None whatever. C

3090. Has the matter been discussed?—No, it has never been discussed. D

3091. You have not had any instructions?—I have had no instructions.

3092. That is a new idea to you?—That is so.

Mr. Justice FARWELL: Is that all the evidence?

Mr. MACMORRAN: That will be all the evidence, my Lord. E

Mr. MACMORRAN summed up the case on behalf of the Defendants.

Mr. UPJOHN was heard in reply.

His Lordship reserved Judgment.

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In the High Court of Justice.
CHANCERY DIVISION.

ROYAL COURTS OF JUSTICE,
Monday, February 15th, 1904.

BEFORE
MR. JUSTICE FARWELL.

THE ATTORNEY-GENERAL
AND OTHERS

V.

THE MAYOR, ALDERMEN AND
CITIZENS OF THE CITY OF
NOTTINGHAM.

MINUTES OF EVIDENCE.

FIFTH DAY.

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